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A PLEA FOR A MORE LOCAL OPERATION IN REALLY EARLY BREAST CARCINOMA

BY

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(WITH SPECIAL PLATE)

It has long been the teaching of surgeons that carcinoma starts as a local change, perhaps one cell taking upon itself the characteristics and habits of malignancy and, by multiplication, forming the carcinomatous tumour. Such a theory, though impossible to prove, is probably correct. Naturally weeks, perhaps months, must elapse before the multiplication of cells creates a mass large enough to be perceptible. It is longer before it becomes noticeable, and longer still before it assumes the characteristic signs which we associate with malignant disease, such as adherence to the skin, retraction of the breast or nipple, or invasion of the adjoining lymphatic glands. If this is true, then it is logical to suggest that a local operation can eradicate this disease, if performed at a sufficiently early date. Despite this logic, however, surgeons have till lately been shy of any procedure short of a so-called radical operation, and still decry such procedures as unsafe and unsurgical. Those who have been brought up in the atmosphere of the radical operation with no experience of anything less extensive must remember that they are repeating dogma and not speaking from formed judgment. Medicine is never advanced by such action.

Many years ago I made this suggestion and started carrying it out. I was chaffed by friends and taken to task by others for having made it. Lately, however, there has been a swing of the pendulum in the direction of more conservative procedures, especially in the United States, where the radical operation originated, and in 1937 Mr. Keynes published a paper urging local operations on the breast for early carcinoma, though he approached the subject from a different angle. An attempt will now be made to show that not only can the operation be successful, but that in competent hands it can confer the same amount of safety as the more extensive operation, and at the same time the patient has the inestimable advantage of not having to undergo the mutilation of her entire breast.

Early Carcinoma Defined

To begin with, however, early carcinoma must be defined; for that is the crux of the matter, and on that the safety of the procedure depends. An early case of carcinoma in this sense is one in which there is a faintly perceptible something in the breast—hardly a lump and certainly not a tumour. It has no well-marked textbook characteristics of malignancy. It has been said that diagnosis is impossible at this stage; but this is not the case, and the proof rests in the number of minute carcinomata Professor Newcomb has preserved for me in the museum of St. Mary's Hospital. These tumours have one invariable characteristic, which is all-important for diagnosis—they throw a shadow on transillumination with strong light. If such a shadow is seen the tumours, after excision, will nine times out of ten be found to be carcinomatous, but transillumination is the only method by which they can be diagnosed.

Having, then, laid down the limits of safety for others, I must own that I have not always kept to them. These limits have been overstepped if the skin has just begun to be dimpled, or if there have been doubtful glands in the axilla, in which event the axilla has been cleared at the same time. But cases have not been considered suitable for local operation if two characteristics of malignancy are beginning to show; nevertheless I have still performed it in many such instances. I have little excuse to offer for going outside the limits laid down, except that of natural curiosity in treading a path which to me was unknown, and perhaps urged on by the enthusiasm which imbues all explorers in strange and forbidden fields. These limits have been surpassed, too, in deference to the wishes of the patients who would not tolerate loss of the whole breast.

The Present Series

In all notes have been made of 128 cases. Of these I consider that 93 were quite suitable for the conservative procedure. I find it very difficult to divide up my cases, as naturally one could suppress into the unsuitable class all those which did not have a happy result. Quite large tumours are included and everything of a doubtful or unproved nature has been placed on the debit side of the account, although there is no more reason for placing it on one side than on the other. In many cases the glands were already found invaded, so they were not really in the first stage. Nevertheless they were considered suitable before operation, and it is upon that judgment that they are included here.

I always hesitate to publish medical statistics: taken in the lump they are valueless, and when classified into the different categories the figures are too small to be convincing. I must say at once that never have I been able to produce figures for carcinoma, whether of the breast, the tongue, or the rectum, as satisfactory as those recorded by other surgeons. A perusal of our own figures may, however, surprise those who have no knowledge of the local procedure.

No. of suitable cases		93
Lost sight of	5	
Living	62	
Dead	26	
Living:		
With no recurrences		47
With distant recurrences		3
With local recurrences		12
Dead:		
From intercurrent disease		12
With no local recurrence		11
Having had local recurrence		3

We will consider the categories in that order.

Those Lost Sight Of

Of this group one went to Argentina the same year. One was lost sight of after eight years, as her doctor had died. Three left their districts; the letters were returned, and their doctors could give no help: of these, the first was known to have kept well for one year eight months, the second for three years three months, and the third for nine and a half years, after the operation.

Living

Of the 62 living 47 had no recurrences. The average age of the 47 when first seen was 51.5 years; the youngest was 34 and the oldest 74. The survival table is as follows:

2½ years	1	7 years	5
3 ,,	8	8 ,,	1
4 ,,	8	9 ,,	1
5 ,,	2	10 ,,	6
6 ,,	9	10 to 15 years	6

The longest survival among those living is fourteen and a half years (one died after twenty-four years). Twelve patients have lived longer than ten years, and eighteeen between five and ten years.

Like all successful cases, these possess little interest, as they resulted exactly as was expected. It is hoped to publish them in full elsewhere, together with some 36 unsuitable cases operated on in the same way; I therefore suppress details here. It is the failures and recurrences which form the interesting side of the picture and to which I would rather draw attention.

WITH RECURRENCES

There are 15 living who have had recurrences: 3 have distant but no local manifestations and 12 have local recurrences. The 3 with no local recurrences were:

No. 8.—Aged 32. 5/9/28: mass and glands removed, both carcinomatous. 13/2/36: metastases suspected in bones from *x*-ray report; treated by *x* rays. Lost sight of and believed dead. Doctor wrote January, 1939: "She was enjoying winter sports in Switzerland." Survived 10 years 4 months.

No. 15.—Aged 40. 3/3/30: nodule removed, radium. May, 1936: recurrence in the right breast, radium. Survived 8 years 10 months.

No. 42.—Aged 71. 2/4/36: mass removed with glands; carcinoma in breast 2 cm. across. 31/3/38: lump noted six months ago in right breast; removed—carcinoma. Survived 2 years 8 months.

I cannot help thinking that the suspected recurrences in No. 8 may not have been real; otherwise the case is unique in my experience. Everything was against this patient; the glands were involved, and she was only 32 years old. In the last two cases carcinoma appeared in the opposite breast, and in these I have supposed it to be a recurrence and not a carcinoma starting in the other breast. To my mind the doubt only arises after freedom from all signs of the disease for a long period, perhaps ten or fifteen years, when it is impossible to be sure whether the condition is a secondary growth or a tumour starting *de novo*. In No. 15 the interval was six years. Patient No. 102, who died with no local recurrence, also had a metastasis in the opposite breast.

WITH LOCAL RECURRENCE

With regard to the 12 cases which have or have had local recurrence, perhaps it is as well to point out that all suspicious signs have been classed as recurrences and treated as such, though proof may be lacking. Proof was possible only in those operated upon. A good many operations were performed for supposed recurrences which luckily proved negative, and some of those cases treated by radium as recurrences may not have been recurrences at all, but, as they were considered so, they are classed as such. They are as follows:

No. 12.—Aged 48. September, 1927: a small carcinoma removed by her doctor. October, 1928: recurrence removed and axilla cleared; carcinoma in breast. Survived 11 years after the first and 10 years after the second operation.

No. 19.—Aged 53. 1/6/23: discharge from right nipple; mass 1 inch across, removed. 5/5/31: pea-like mass at left nipple, scab on right nipple, both removed; carcinoma right nipple, left side suspicious; radium to right side. 29/4/32: mass left nipple, removed; carcinoma. Survived 19 years.

No. 29.—Aged 43. 8/6/33: mass removed with glands; carcinoma in breast; radium to axilla. 18/7/33: surface irradiation. 7/10/33: millet-seed nodule, surface irradiation. Survived 3 years.

No. 41.—Aged 43. Mass 1 inch across. 13/1/36: removed; carcinoma; interstitial radium. 17/12/36: lump removed from back and nodule from breast; fibroma from back and carcinoma from breast. Survived 3 years.

No. 61.—Aged 37. Lump and discharge from right nipple. 20/1/24: removed; carcinoma. 29/2/28: discharge from nipple, and from September, 1930, to September, 1933, was treated with radium; later nipple was removed and colloid carcinoma found. Survived 15 years.

No. 62.—Aged 32. 17/8/34: mass removed; carcinoma; surface irradiation. 16/1/36: nodule of carcinoma removed from scar. November, 1936, nodule removed; surface irradiation. Survived 4½ years.

No. 63.—Aged 49. 19/12/26: mass removed with glands; carcinoma in both; surface irradiation. 5/4/37: nodule of carcinoma removed from site of drainage tube. 17/11/37: vagal cough, chest full of fluid; believed to be dying of internal metastases. 25/11/38: put on more than 2 stone, well; radiation to gland in axilla. 22/4/39: putting on weight steadily. Survived 13 years.

No. 89.—Aged 48. 11/1/35: mass 2 inches across removed with glands; carcinoma in both; radium to axilla. 22/10/36: gland removed from axilla; carcinoma. 2/2/37: mass removed from near nipple, non-malignant. Survived 4 years; note size of mass.

No. 94.—Aged 60. 20/9/35: lump removed with glands; carcinoma in both; radium. 27/3/38: nodule now ulcerating through the skin; known for months; radical operation; carcinoma in breast. Survival 3½ years.

No. 105.—Aged 40 11/3/29: mass removed and reported as adenoma. 17/2/36: two nodules near scar; radium. 14/3/38: fell and broke her arm; very hysterical. 4/1/39: well. Survived nearly 10 years.

No. 108.—Aged 42. Lump for 2 years. February, 1931: removed; carcinoma; radium. 1/5/33: nodule near scar; radium. 12/5/38: spiritualistic and clairvoyant—"God has now cured her." Survived 8 years.

No. 124.—Aged 43. February, 1929: mass removed; carcinoma. April, 1929: glands in axilla; radium. Necrosis of three ribs followed. Survived 10 years.

(All these patients are believed to be living August, 1940.)

The average age of the patients with recurrences was 45 years; the youngest was 32, and there were two of this age; the oldest was 71. The average term of survival to date was 10½ years. The average at which recurrences appeared locally was 2 years 9 months.

Dead

Those who died can be divided into three groups: (1) those dead of intercurrent disease (12 cases); (2) those dead with carcinoma but no local recurrence (11 cases); (3) those dead after local recurrence but not necessarily with or from their local recurrence (3 cases).

DEAD OF INTERCURRENT DISEASE

Those who died of intercurrent disease were as follows:

No. 5.—Aged 54. Nodule removed 8/11/20. A year later the remainder of the breast was removed; searched, but no carcinoma found. Died of appendicitis 18 years later.

No. 55.—Aged 43. 24/2/25: local removal. 12/3/37: a gland removed from axilla; non-malignant. November, 1937: died suddenly of heart disease, survived 12¾ years.

No. 59.—Aged 71. 7/5/29: removal; carcinoma in cyst wall. Radium to axilla. Treated for high blood pressure and died of heart failure, surviving 5½ years.

No. 60.—Aged 78. 29/2/30; removed with glands; carcinoma in breast; large uterine fibroid removed at same time; radium. 17/2/37: was well but going blind; died same year, surviving 7½ years.

No. 68.—Aged 75. 14/8/27: removal; remained well till she died of senility, surviving 4 years.

No. 71.—Aged 66. 1/7/30: mass removed with glands; carcinoma in both; radium. 19/10/30: nervous, so remainder of breast removed; no carcinoma found. Died of a stroke, 7/4/37. Survived 7 years.

No. 82.—Aged 94. 5/11/35: removed; carcinoma. Died of myocardial degeneration 18/1/37, aged 96. Survived 1 year.

No. 88.—Aged 41. Mass size of a florin 25/1/35, removed with glands; carcinoma in breast. Died suddenly 5/1/38, subarachnoid haemorrhage. Survived 3 years.

No. 96.—Aged 70. Mass 1/2 by 3/4 in. removed with glands; carcinoma in breast. She had a bad heart and was given paraldehyde; short operation, but died of heart failure the same evening.

No. 97.—Aged 50. 29/3/13: removal with glands; carcinoma in breast. January, 1930: son wrote to say she had died of "cancer of the colon." Survived 17 years.

No. 98.—Aged 39. "Adenoma" treated for a year by diet and diathermy. 28/5/26: removal; carcinoma infiltrating widely. Glands felt above clavicle. 10/6/29: only one tiny gland felt. 15/6/29: died suddenly; no sign of old disease. Survived 3 years.

No. 100.—Aged 62. Discharge from left nipple. 15/8/32: removal; duct carcinoma. 6/2/35: died of influenza. Survived 2½ years.

The average age of the above 12 patients who died with no trace of the former carcinoma was 62. The youngest was 39, the oldest 94. Their average survival period was seven years, not counting the one who died the day of the operation. The longest survival was eighteen years. In No. 98 the carcinoma was noted as infiltrating widely, but with this exception and that of No. 82, aged 94, whose tumour was large but whose expectation of life could not have been long, all could be classed as in Category 1. Most were early cases, yet 12 out of 91—that is, 13%—died from conditions quite apart from their original disease. Statistics were published lately which recorded that after ten years a surgeon was fortunate enough to have lost only 16% *from all causes.*

DEAD FROM CARCINOMA

We now turn to 14 patients who died from carcinoma. The 11 who died of carcinoma but with no local recurrence were as follows:

No. 13.—Aged 41. 2/3/25: removal; carcinoma. 10/1/30: losing weight; developed tubercle; went to a sanatorium. From 11 st. 8 lb. she sank to 6 st. and was lost sight of; presumed dead of metastases, possibly tubercle. Survived, known, 4 years.

No. 31.—Aged 40. 20/11/34: pea-like mass removed with glands; radium; carcinoma in both. 24/11/37: metastases in bones; *x* rays with improvement. 18/3/38: going downhill. Survived 4 years.

No. 54.—Aged 41. Pea-like mass and discharge from left nipple. 9/1/24: removed; carcinoma. 22/3/27: mass at right nipple; radical operation; carcinoma in breast and glands. 6/10/28: glands above right clavicle; radium; glands disappeared. 6/9/29: cough; pleurisy; 40 oz. removed from right chest. Died later. Survived 5 years 8 months from first and 2½ years from second operation.

No. 58.—Aged 49. Mass removed 19/4/28; carcinoma. February, 1931, died; metastases in liver and peritoneum. Survived 2 years 10 months.

No. 67.—Aged 41. 11/4/30: mass removed with glands; carcinoma in both. 5/11/34: treated for rheumatism and colicky pains. 18/11/34: laparotomy; carcinoma internally; ascites. Died January, 1936. Survived 5½ years.

No. 69.—Aged 53. 2/9/30: mass removed with glands; carcinoma in both; radium. 29/2/32: short of breath, vagal cough; *x* rays with no benefit. Died 23/11/32. Survived 2 years.

No. 70.—Aged 46. 2/9/30: mass removed with glands; carcinoma in breast; radium. 10/7/35: suddenly developed metastases in brain and died. Survived 5 years.

No. 72.—Aged 40. 3/2/30: mass 1 inch across removed with glands; tiny nodule of carcinoma in a mastitic breast; radium. 14/12/31: headaches. September, 1932: died of metastases in brain. Survived 2¾ years.

No. 99.—Aged 41. 5/8/25: ? adenoma removed; carcinoma; two weeks later radical operation. 18/5/27: cyst of ovary removed by Mr. Bannister; secondaries found in peritoneum. Died June, 1928. Survived nearly 3 years.

No. 102.—Aged 47. 28/6/26: mass removed; carcinoma. given deep *x* rays. 5/1/27: a gland removed from axilla; swab left in; later a tube put in; died of secondary haemorrhage. Survived 6 months.

No. 106.—Aged 38. 7/6/29: mass removed from left breast with glands; carcinoma in breast; radium. 1/4/33: right breast carcinomatous; interstitial radium. Radiographs showed femur and vertebrae affected; deep *x* rays. 30/12/33: died; necropsy showed no trace of carcinoma in left breast. Survived 4½ years.

The average age of these 11 cases was 43; the youngest was 38 and the oldest 53—the only two not between 40 and 50. One died accidentally (No. 102); of the remaining 10 the average survival period was four years. No. 13 was presumed to be dead, but she might be placed among those not traced; she may have died of tuberculosis. Another patient, No. 5, was placed in this series, and was presumed to be dead as she was reported to have metastases in the pelvis and vertebrae when last heard of. However, in January, 1939, her doctor assured me she was enjoying winter sports in Switzerland.

None of these cases showed any sign that the original operation had not been adequate, nor was there any return of the disease locally. If the local operation had not been sufficient one would expect that the disease would have returned locally before the end of the four years of survival. In all probability, therefore, the cells floated off from the primary tumour before the local operation; they almost surely passed to their destination by means of the blood stream. This points to the fact that spread by the blood stream is far more common and dangerous than is generally supposed. The cells which pass along the lymphatics are halted at the glands and can be removed, whereas if they pass by the blood stream they are at once beyond the reach of surgery.

No. 99 had a radical operation performed within two weeks of the local one, but in less than two years a laparotomy showed internal metastases. Here the cells must have floated off at an early date, unless it be asserted that the local operation liberated them. This is unlikely, as it occurred in no other case, and there was no return locally. No. 58 resembled No. 99. Nos. 70 and 72 both died of metastases in the brain, which must have been blood-borne. Post-mortem examination on No. 106 showed no signs of disease in the breast operated upon 4½ years previously.

DEAD AFTER LOCAL RECURRENCE

The 3 who died after having had local recurrences were as follows:

No. 53.—Aged 47. 8/9/10: thought to be mastitis; removed; pathological report was mastitis. Five months later nodules appeared round scar, but she did not report and

have a radical operation till 8/9/11. In 1933 she broke her femur, and died on 14/4/34. Survived 24 years.

No. 60.—Aged 56. 16/1/29: mass removed; carcinoma. I had gone too close to the growth, and part was left behind. Further operation was refused; radon applied. 3/9/29: axilla cleared, carcinoma in glands. 8/10/30: nodule in scar; radium. 10/12/35: nodules on shoulder, back, and abdomen; radium. Died of internal metastases January, 1937. Survived 8 years.

No. 64.—Aged 38. 15/12/24: mass removed with glands; carcinoma in breast. 25/1/27: nodule at nipple for 8 months; removed; carcinoma. 3/10/28: two nodules; radium. 8/5/32: died of internal metastases. Survived 7½ years.

In these cases little help or co-operation was received from the patients. No. 53 knew of her nodules for seven months before she came for advice, though it is true she had been told the condition was simple. After that she evidently wished to forget the whole episode, as she refused examination, nor would she reply to letters. There was no reason to suspect that the fracture twenty-four years later had anything to do with her former disease. In Case 60 I had gone too close to the tumour. The patient and her husband refused to allow me to rectify my mistake. I therefore had to do the best I could: radium could not be obtained, so I had to fall back on radon, a very inferior substitute. No. 64 wasted six months in spite of the fact that four members of her family died of cancer; when she had a recurrence she hid all knowledge of it for eight months.

There are therefore 15 cases in which the operation was not a success. The original lump was removed in 2 cases by the patient's doctor without the slightest suspicion that it was carcinoma, and I removed the mass under the impression that it was mastitic in 3 cases and an adenoma in another. It is only to be supposed that a wider margin would have been taken if the condition had been thought to be carcinomatous.

The reappearance of the growth near the original site is interesting. The average time for reappearance was two and two-fifths years; in only 3 cases was it delayed beyond two and a half years, and in each of these there was quite a long delay (seven years, six years, and seven years). The average time for local reappearance in those who are still living was two years nine months, and was also only exceeded in 3 cases (seven years, six years, and seven years). The average time for the other 12 cases was just a year. This shows that in incomplete operations the fault will usually be discovered at an early date, which is only what we should expect, and if the disease is treated at once radium is able to check it. If no local recurrence takes place it can be assumed that the local operation has been adequate. Whether cells have already escaped from the primary growth is another matter. This is not to say that secondaries will not appear at a later date, even after the most radical operation, for these cells escape from the growth before operation. As time goes on, however, recurrence becomes more rare. If cells have already passed to the glands they will be found there and the glands can be dealt with either by operation or by radium; no other glands can be infected, as the original growth has been removed. If cells have gained the blood stream no operation, however wide, can have the slightest effect upon them; we can only operate on the extrathoracic portion of the disease.

The survival time of the three who died was twenty-four years, eight years, and seven years.

Conclusion

This, then, is the record of 93 cases in which a purely local operation was performed and only a small segment of the breast removed. In many cases casual observation would not disclose that the breast had been interfered with. It is not necessary to add that after the operation constant vigilance is necessary on the part of the doctor, and equally important is the willing co-operation of the patient. In so many cases this was lacking, and I am afraid will always be. I have put the figures simply, in the hope that the plea for a more conservative procedure in really early cases will be seriously considered.

Summary

An attempt is made to show that local operation in really early cases of breast cancer can confer the same amount of safety as the more extensive operation.

The diagnosis of early carcinoma suitable for employment of the conservative method is described.

Notes are given of 93 such cases, and the results of the operation are discussed.

TUBERCULOSIS OF THE KNEE-JOINT IN ADULTS

BY

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(WITH SPECIAL PLATE)

This article chiefly concerns local aspects of the tuberculous knee-joint, and is based on 108 cases treated at St. Luke's Hospital, Lowestoft, from 1931 to 1935 inclusive. The patients have remained under after-care observation, and up-to-date information of their condition has therefore been obtainable, except in 9 cases which it has not been possible to trace recently.

The age and sex incidence was as follows: from 16 to 20, 37.5%; 21 to 30, 37.5%; 31 to 40, 11.5%; 41 to 50, 11.5%; over 50, 2%. Males and females were affected equally.

Aetiology

Tuberculosis of the knee-joint is a haematogenous infection secondary to a focus of active disease elsewhere in the body. Often the primary focus cannot be detected, and in many such cases the bronchial or mesenteric lymph nodes are the starting-point of disease. In the cases treated at St. Luke's Hospital the association with other detectable tuberculous lesions, active and quiescent, was as shown in Table I.

TABLE I

Site of Disease	Active Cases		Quiescent Cases		
	No.	Percentage associated with Knee Disease	No.	Average Period of Quiescence	Percentage associated with Knee Disease
Lungs	8	7.4	9	8 years	8.33
Multiple lesions ..	4	3.7	1	4 ,,	0.9
Cervical glands ..	0	0	4	4.5 ,,	3.7
Spine	2	1.85	1	1 year	0.9
Kidneys	2	1.85	0	—	0
Single joints ..	1	0.9	3	15 years	2.77
Lupus of face ..	1	0.9	0	—	0
Peritoneum ..	0	—	1	2 months	0.9
Epididymis ..	2	1.85	1	11 years	0.9
Sternum	1	0.9	0	—	0
Totals	21	19.35	20	—	18.4

Thus in this series of cases 37.75% of patients suffering from tuberculous arthritis of the knee-joint had tuberculous lesions elsewhere—active in 19.35% and quiescent in 18.4%.

Relation to Trauma.—History of trauma which might have borne some relation to development of the tuber-

culous joint was elicited in 15% of cases. The average interval between receiving the injury and the development of symptoms was 4.5 months. In many other cases the history of injury was too vague or too far distant to warrant any definite association with the tuberculous joint. Trauma causes a localized diminution of tissue vitality and inflammatory changes, favouring lodgment and subsequent activity of tubercle bacilli, which may be carried to the region by the blood stream from the primary focus.

Pathology

The early stages of disease in young adults, approximately to the age of 20, are marked by the principal changes occurring in the synovial membrane in the first instance, bone involvement being very slight or even absent. In most cases early localization of disease to the synovial membrane is not maintained, and perichondral or subchondral erosion subsequently develops. In older patients tuberculous disease of the knee-joint most frequently starts in bone, spreading to the synovial membrane via the circulus vasculosus or by direct continuity of disease. The primary bone focus is sometimes solitary in the first instance, but just as often two or more small foci are present. Common sites are in the substance of one or both femoral condyles—often well removed from the articular margin—and in the region of the intercondylar notch of the femur. Primary bone foci in the tibia are uncommon: only 3.89% occurred in the St. Luke's Hospital cases.

By the time diagnosis has been established pathological changes in a tuberculous knee-joint have already passed the earlier stages of disease. This is indicated in Table II, which also shows the subsequent development of bone disease in cases of primary synovial origin. The table is compiled from the findings in 77 cases of recently developed disease on their admission to hospital.

TABLE II.—*Summary of 77 Cases of Recently Developed Disease*

Average Duration of Symptoms	Bone Disease Only	Synovial and Bone Disease Present	Synovial Disease Only	Remained Purely Synovial Disease	Ultimately Developed Bone Foci
4 months	16	51	10	3	7

The findings summarized in Table II show the existence of bone disease in 87% of cases, subsequently increasing to 96.1%, while the incidence of purely synovial disease dwindles from 13% to 3.9%. The high incidence of bone disease—immediate and remote—has an important bearing on treatment.

Focal bone disease *per se* may undergo three principal changes, depending chiefly upon the virulence of the infection and the patient's powers of resistance. (1) The disease remains comparatively localized and reaches quiescence; bone cavities become obliterated or remain as cavities circumscribed by well-calcified bone. (2) The disease extends laterally, erupting through the surface of the bone above the line of reflection of the synovial membrane, and causes abscess formation in the soft tissues. (3) The diseased area extends downwards, usually establishing communication with the joint. This is the commonest occurrence, and once the joint has become grossly infected the later and familiar destructive changes of articular disease progress until quiescence eventually becomes established.

Repair.—Fibrosis is the predominant factor. In the synovial membrane it is common to find small encysted abscesses and localized areas of caseation or myxomatous degeneration long after quiescence of disease has been apparent clinically. Following erosion of its articular surfaces the joint undergoes fibrous ankylosis of varying stability. Bony ankylosis, unless associated with previous sinus formation and secondary infection, is a rarity.

Symptoms and Signs

Pain is the first symptom in 70% of cases; it is of insidious onset, and in the early stages of disease is relieved by rest. Extra-articular foci of disease cause dull aching pain; erosion of the joint surfaces causes sharp stabbing pain, which increases in intensity and persistence as erosion proceeds and is accentuated by jarring, tripping, and twisting. *Stiffness*, which usually later becomes definite pain, is the first complaint in 10% of patients. Alternation of pain with stiffness is not uncommon. *Limping* is noticed by 70% of patients.

Swelling of the joint, associated with pain or stiffness, is present in 54% of cases first seeking medical advice. In a further 22% of cases the initial abnormality noticed by the patient is simply swelling of the knee. Synovial disease first causes fullness in the parapatellar fossae, below the patella, or in the suprapatellar pouch. Later the swelling becomes more generalized as the synovial disease spreads and the periarticular soft tissues become involved. Typical "white swelling" develops in cases of progressive disease. The presence of free fluid in the joint is uncommon. Muscular wasting is almost invariably present, but is least marked in cases of purely synovial disease.

Limitation of movement is gross, and is accompanied by spasm when the joint surfaces are eroded; though range of flexion may be but little impaired when the disease is synovial or when bone disease is extra-articular. *Tenderness*, when present, is most often elicited on the inner side of the joint. *Local heat* is always present. *Abscess formation* in the early stage of disease occurs in 6.5% of cases.

X-ray Appearances

X-ray changes in the early tuberculous knee-joint are as a rule inconclusive rather than definite. One or more of the following abnormalities are usually to be seen: (1) a general appearance of haziness; (2) increased width of the normal soft-tissue shadow—woolliness, distortion of shape, or actual obliteration of the normal triangular shadow of the infrapatellar pouch seen in the lateral view; (3) osteoporosis; (4) diminished joint space, often only on one side; (5) lack of definition, or thinning, of the cortical bone.

After an average interval of four months from the onset of symptoms an abscess cavity or cavities are usually present in bone; localized marginal erosion may also be seen. The later bone changes are obvious. In general, destructive bone changes are more advanced than appears from *x*-ray examination. We have repeatedly verified this at operation.

Diagnosis

Diagnosis of early cases is often difficult, and sometimes is impossible. It is far more justifiable to treat an obscure case of subacute arthritis as potentially tuberculous, pending clarification of the condition, than to order physiotherapy for the patient—as happens in some 15% of cases prior to admission to hospital. The tuberculous knee-joint presents a general picture of subacute or chronic arthritis, and in attempting to determine the underlying cause it is essential to ascertain accurately, and to correlate, the history, physical signs, and *x*-ray appearance. History should include inquiry into such matters as past obscure illnesses, and the health of persons with whom the patient is ordinarily in close contact. The insidious onset of joint symptoms is important, as is their

spontaneous alleviation, which is never complete. The patient's general physical condition is an untrustworthy guide. In 87% of cases it is good or has only slightly deteriorated; in 13% it is poor or very poor.

Of laboratory aids to diagnosis *bacteriological examination of pus* from an abscess is the most valuable. The *complement-fixation test* is often negative even in the presence of widespread and active disease. Conversely, a quiescent tuberculous lesion in some other part of the body may result in a positive reaction being obtained. *Biopsy of the synovial membrane* is not without risk, and is inadvisable. Seddon has recently suggested the value of biopsy of an inguinal gland as an aid to diagnosis. I have no experience of this procedure, but intend to try it.

In adults, the conditions with which tuberculosis of the knee-joint may most readily be confused are:

Subacute or Chronic Infective Arthritis.—The rheumatoid type of disease occasionally causes difficulty, but usually there is evidence of past or present arthritis in other joints. Osteo-arthritis is usually easily distinguishable from tuberculosis.

Gonorrhoeal Arthritis.—The hydropic form of acute gonorrhoeal arthritis causes little local or general disturbance. Hydrops of tuberculous origin is very uncommon. In a doubtful case aspiration of the fluid and its inoculation into a guinea-pig may prove helpful. A history of urethral discharge is naturally sought.

Syphilis.—Secondary syphilitic hydrarthrosis is usually transient and often bilateral. The plastic forms of late secondary or of tertiary syphilis may show clinical similarity to tuberculous disease. Determination of the Wassermann reaction should therefore be a routine measure, but the possible coexistence of syphilis and tuberculosis must be borne in mind.

Haemophilia.—The onset is sudden, often following an injury that is significantly trivial. Prolongation of the blood-coagulation time and diminution in the number of platelets are associated with a haemophilic joint.

Traumatic lesions such as synovitis, loose body, or an injured intra-articular structure are occasionally mistaken for tuberculosis.

Neoplasms.—Giant-cell tumour and osteogenic sarcoma may bear some clinical resemblance to tuberculosis of the knee-joint, but are readily differentiated by *x*-ray examination.

Aims of Treatment

The chief aims of treatment of tuberculous joints of the extremities are: (1) restoration and preservation of the general health; (2) to maintain quiescence of the joint lesion; and (3) to ensure good functional capacity of the diseased limb.

Local treatment of tuberculosis of the knee-joint has seen three main phases. First, extirpation of disease was attempted by extensive excision of the joint. This was followed by a long era of purely conservative treatment on the lines advocated by Rollier, and met with considerably improved results. Finally, the modern tendency is to combine conservative and operative measures with the object of establishing quiescence of the general and local disease before effecting arthrodesis of the joint in the position of election. It is not until the local disease has reached quiescence that a decision is made as to whether conservative treatment will suffice or whether arthrodesis is necessary.

Conservative Treatment

The principal indications for restricting treatment to purely conservative measures are:

1. When the disease has apparently remained purely synovial.

2. When the bone focus or foci have remained well removed from the articular margin and are surrounded by healthy bone.

3. In quiescent cases which have suffered widespread involvement of bone. Arthrodesis in these circumstances necessitates the removal of much bone, creating a risk of reactivation of disease, and the result of operation is uncertain. (Figs. 1 and 2 on Plate show the result of conservative treatment of such a case, with an excellent functional result.)

4. When the patient is suffering from other active tuberculous lesions. Active phthisis alone is not necessarily a bar to successful operation.

The results obtained in 30 cases treated conservatively are analysed in Table III. The small number of patients for whom conservative treatment appeared to suffice will be noticed. The results obtained are indifferent, and within recent years we have found a diminishing proportion of cases to be suitable for conservative treatment only. The number of old cases returning to hospital—31 out of the 108 in this series—is a telling proof that there are only two safe and functionally good end-results of treatment of the tuberculous knee-joint—free movement or bony ankylosis.

TABLE III.—*Analysis of Results of Conservative Treatment in 30 Cases*

Present Condition of Joint	Remaining Quiescent	Reactivated and Later Excised	Reactivated and Amputated	Deaths	Cause of Death	Total
Freely movable	9	3	0	1	Generalized tuberculosis	13
Firm fibrous union	5	1	0	1	Phthisis	7
Incomplete fibrous union	3	3	1	1	Phthisis	8
Quiescence not attained	—	—	—	2	Generalized tuberculosis. Phthisis	2

At St. Luke's Hospital we favour the use of a Thomas knee-splint with fixed traction during the stages of active disease, equilibrium, and early quiescence. This form of apparatus quickly overcomes pain and spasm and tends to reduce or even save erosion of articular surfaces. In cases where a freely movable joint is obtained on the completion of treatment the return of mobility after the use of traction is far more rapid than when immobilization in plaster has been employed. Moreover, the use of a Thomas knee-splint allows of frequent inspection of the diseased joint, and facilitates any necessary local treatment such as aspiration of abscesses, sunlight treatment of sinuses, etc. Traction is followed by the use of plaster from toes to groin, and finally a duralumin and leather splint is employed. The period of total recumbency averages fourteen months.

Operative Treatment

ARTHRODESIS

Arthrodesis, after arrest of the general illness and local disease, is the treatment of choice for most cases of tuberculosis of the knee-joint in adults. The chief contraindications to operation are active septic infection of sinuses and persistently active local disease. The patient's youth need not preclude arthrodesis provided the epiphysial cartilage is not damaged by operation.

Essential measures of the operation include removal of the suprapatellar pouch and all intra-articular structures. Areas of bone erosion are curetted. At St. Luke's Hospital the bone ends are cut square, and we find it unnecessary to remove more than an average total thickness of half an inch. No form of internal fixation is used to maintain the excised joint in a position of full extension, and immobilization is effected by the use of a Thomas knee-splint with foot-piece, over which a light plaster is applied from toes to groin. This apparatus is followed by the use of plaster alone ten weeks after operation. Bony union occurs four months after operation, but is

occasionally delayed. Figs. 3 and 4 show the condition of a knee-joint two years after arthrodesis. Table IV is a summary of results obtained by arthrodesis during the years 1931–5 inclusive.

TABLE IV

Result of Operation	No. of Cases	Quiescence Maintained	Reactivated and Amputated	Deaths	Cause of Death	Interval between Operation and Death
Bony union	49	46	—	3	Renal tuberculosis	1 year
					Tuberculous meningitis	5 months
					Heart disease	8 years
Firm fibrous union	5	5	—	—	—	—
Incomplete fibrous union	2	2	—	—	—	—
Non-union	3	—	2	1	Phthisis	13 months

The table shows that bony union was obtained in 83% of 59 cases, which closely agrees with the results published by Henderson and Fortin (1927), who reported bony union in 85.9% of 211 resections. The 5 cases in which firm fibrous ankylosis resulted have remained functionally excellent, but from the operative point of view the result obtained must be regarded as having fallen short of the objective. The cases of incomplete fibrous union and of non-union, and those which subsequently required amputation, were chiefly due to the common cause of operating in the face of smouldering disease—a mistake not always easy to avoid.

PRIMARY AMPUTATION

Primary amputation was performed in ten cases of this series in an attempt to save the patient's life or on account of the diseased joint being beyond hope of recovery. Three patients died within a few days of operation. Three more survived operation and left hospital, but have died at varying intervals since. The remaining four patients are well.

Amputation is a last resort, but the tendency is to delay it too long. A patient suffering from profound toxaemia has often passed the stage when amputation could have saved his life. Conversely, it is by no means uncommon for widespread disease to exist with remarkably little constitutional disturbance, and in such cases amputation should not be performed until prolonged conservative treatment has failed to yield any hope of recovery of the diseased joint.

Summary

Some general aspects of tuberculosis of the knee-joint in adults are reviewed, with special reference to 108 cases treated at St. Luke's Hospital.

The association of the local lesion with other tuberculous foci, active and quiescent, is shown in 37.75% of cases.

Reference is made to the early presence of bone lesions and to the high proportion of cases so affected.

Symptomatology, *x*-ray appearances, and diagnosis are discussed. Mention is made of the difficulties of early diagnosis of disease in some cases.

An outline of some of the principles of local treatment is given. Results of conservative treatment in a small series of cases are stated. The results in 59 cases of arthrodesis are quoted, and the opinion is expressed that this treatment is the most suitable for the majority of adult cases, following conservative treatment.

Indications for primary amputation are mentioned. Ten cases are recorded.

My thanks are due to Dr. H. J. A. Colvin, medical superintendent of St. Luke's Hospital, for giving me the benefit of his advice and wide experience. I also have to thank the Medical Officer of Health to the London County Council for his kind permission to publish this article.

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TESTOSTERONE PROPIONATE IN FUNCTIONAL IMPOTENCE

BY

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All observers are agreed on the successful results obtained with testosterone propionate in the treatment of impotence in castrated or hypogonadal patients. In view of this a trial was made of its effect in six patients with impotence unassociated with any obvious endocrine disorder and probably due to psychological causes. As the following case reports show, negative or unsatisfactory results were obtained in every case.

Case Reports

Case 1.—The patient, a single man aged 48, had been impotent for six years. He associated his trouble with frequent masturbation as a youth. At the age of 18 he began to have frequent involuntary nocturnal emissions, with dreams of a sexual type. During the course of years these became more pronounced, and later he had a constant feeling of exhaustion, weakness, and discomfort in his testes, which affected his work and happiness. There was no change in hair growth or in the size of his genitalia. He consulted Dr. Henry Wilson, who made the diagnosis of psychogenic impotence. Psychological treatment was unsuccessful. On examination he was seen to be a somewhat undersized nervous man, with a hesitant speech. The contour of his body had a slightly feminine tendency. His hair growth, penis, scrotum, and testes were normal. His trunk and legs were affected with psoriasis. The remainder of the physical examination revealed nothing abnormal. He was treated with 100 mg. of testosterone propionate intramuscularly three times a week for two weeks without any change in his condition.

Case 2.—The patient was an unmarried man aged 25. Ten years ago the left testis was knocked; it became very painful and later gradually diminished in size. Three years ago erections became less frequent and less powerful, and during the last six months three attempts at intercourse were unsuccessful because of inability to obtain an erection. On examination his appearance and growth of hair were normal, his voice was broken, the penis and right testis were normal, but the left testis was as small as a pea. The remainder of the physical examination was normal. He was treated at first with intramuscular injections of olive oil as a control measure, without effect. He was then given 100 mg. of testosterone propionate intramuscularly three times a week for two weeks. No improvement in his erections resulted.

Case 3.—A widower aged 50, in whom the first signs of impotence appeared between 1920 and 1925. He was married in 1914 and for several years intercourse was normal, but since 1925 this was impossible owing to his inability to obtain an erection. His wife died two years ago, and he would now like to marry again, but hesitates because of his condition. He was seen in the department of psychological medicine by Dr. E. B. Strauss, who diagnosed psychogenic impotence. Treatment by hypnotic suggestion brought about no improvement. Physical examination revealed nothing abnormal. As a control measure he was given intramuscular injections of olive oil for two weeks, during which he had frequent erections at night, but an attempt at coitus was unsuccessful. Treatment with 50 mg. of testosterone propionate intramuscularly twice a week for four weeks and, subsequently, with 100 mg. twice

a week for two weeks did not improve his condition. Unlike patients with hypogonadism he experienced no improvement in his general health, and his depression persisted.

Case 4.—This patient, aged 29, wished to become engaged to be married, but hesitated because of impotence. Occasionally he masturbated, but during the last seven years four attempts at intercourse were unsuccessful owing to his being unable to obtain an erection. At the age of 16 he had mumps, but there was no evidence of orchitis. Treatment for two weeks with 100 mg. of testosterone propionate three times a week was quite unsuccessful.

Case 5.—A married man aged 35. For the last six years he had been gaining in weight and was impotent. During the last few months he lost sexual desire. He was plump, but could not be considered obese. Examination revealed that the growth of hair, penis, and scrotum were normal, but the testes were slightly smaller than normal. The remainder of the examination disclosed nothing abnormal. He was first treated with subcutaneous injections of distilled water twice a week for a month. After the second injection he said that he felt more alert, and after ten days he had coitus successfully on one occasion, an act which he had been unable to accomplish during the previous five or six years. This improvement, however, was not maintained. He was then given 50 mg. of testosterone propionate intramuscularly three times a week for three weeks. During the second night after the first injection coitus was successful, but after that he was quite impotent. Subsequent treatment with gonadotrophic extract of the urine of pregnancy for two months was also unsuccessful.

Case 6.—This patient, a married man aged 43, complained of obesity and impotence. Twenty-two years ago, while receiving a low-rationed diet as a prisoner of war in Germany, he began to put on weight, and has gradually increased in weight ever since. Ten years ago he began to fall asleep at his work as a lorry-driver, and six years ago he had at first premature ejaculation on intercourse, and, later, erections failed, although they would occur on a tram or bus. During the war of 1914–18 he had gonorrhoea and syphilis, both of which were successfully treated. On examination he was a cheerful red-faced man, weighing 19 st. 6½ lb.; his obesity was generalized. His voice, distribution of hair, penis, and testes were normal. His lungs showed evidence of chronic bronchitis; his cardiovascular and nervous systems were normal. There were numerous small varicose veins on his legs. *X*-ray examination showed a small pituitary fossa. His Wassermann reaction was negative; the blood count was normal; the basal metabolic rate on two occasions was + 16% and + 8%. No definite glandular disturbance could be found as a cause of his condition. He was treated with a reducing diet by Dr. George Graham, and lost 3 st. in three and a half months. His impotence was at first treated with intramuscular injections of olive oil twice a week for two weeks. As this had no effect he was given intramuscular injections of 100 mg. of testosterone propionate three times a week for two weeks, but no improvement was obtained, and attempts at intercourse were still unsuccessful. He was then given one dose of 200 mg. of testosterone propionate. During the second and fourth nights after this he had a full erection and intercourse was successful. After a second dose of 200 mg. a week later no response was obtained.

Discussion

Psychological and endocrine disturbances are probably two of the most important causes of impotence, but whereas a disturbance of the psychological factor will always cause impotence, this is not always so in patients in whom testicular hormone is apparently lacking, for it is well known that occasionally some eunuchs are potent. Callow (1938) has shown that eunuchs excrete in their urine an amount of androgen which is within normal limits, and Parkes (1937) and Callow (1938) have suggested that the adrenals may be an additional source of supply. It is possible that in some eunuchs this is enough to maintain potency. In patients whose impotence is due solely to deficient testicular function treatment with testosterone propionate will establish normal potency. The histories of the patients reported above demonstrate that impotence which is not due to an endocrine cause but rather is psychogenic in origin is unaffected by doses of testosterone propionate which had produced a considerable response in eunuchs. So certain is the response to testosterone propionate in impotence due to deficient testicular function that it may be asserted that if such a response is not obtained in a patient with underdeveloped genitalia his impotence is due also to other causes. The following case report illustrates this.

Case 7.—An unmarried Indian aged 24 complained of underdeveloped genitalia and inability to obtain an erection. He had never had full erections; on attempting intercourse he would have a slight erection and ejaculate before penetration. His voice did not break, and he shaved about twice a week. For many years he suffered from nervous dyspepsia, and he was unable to micturate when standing up. On examination the configuration of his body was normal; there was only a scanty growth of hair on the face, the axillary hair was normal, there was no hair on the trunk, and the pubic hair was shaved. His voice was high-pitched. The penis and testes were small, and the prostate was just palpable. He was treated with 100 mg. of testosterone propionate intramuscularly twice a week for two months. Two days after the first injection he began to have nocturnal emissions which occurred about twice a week, whereas previously these did not occur. Treatment caused slight increase in growth of the penis, but had no effect on his impotence or on his general condition.

There are, however, reports in the literature that are not in agreement with these findings. Thus, Hamilton (1937) brought about potency, with doses of 20 mg. of testosterone propionate three times a week, in a man whose impotence was not due to an organic cause and in whom a course of injections of non-medicated oil as a control measure had had no effect. Miller, Hubert, and Hamilton (1938) have reported that one patient with psychogenic impotence was restored to "a low normal sex drive and erectile capacity," and that another, who before treatment "escaped from the environmental situation partly responsible," was restored to complete normality. This patient, however, remained normal while receiving injections of an inert oil. The response obtained in these two patients appeared to be less than that in two eunuchs similarly treated. The most striking results with testosterone propionate in impotence not due to endocrine deficiency are those reported by Huhner (1939), who produced full potency in all the seven patients treated, with doses ranging from 5 mg. to 35 mg. three times a week for one to six months.

From my own observations it may be concluded that an adequate secretion of male sex hormone is necessary to ensure erection on psychogenic stimulation; if, however, the psychogenic stimulus be absent or disturbed excess of the hormone does not compensate for this deficiency. On the other hand, patients with impotence due to hypogonadism seem to be unduly sensitive to the influence of testosterone propionate, for whereas large doses have little or no effect on the erections of normal men, in eunuchs they may cause long-sustained priapism.

Summary

Six patients with functional impotence unassociated with any evidence of testicular dysfunction failed to respond to testosterone propionate given intramuscularly in doses varying from 50 to 100 mg. three times a week for two to six weeks. A seventh patient with hypogonadism also failed to respond after treatment for two months, probably because of a superadded psychological disturbance. As these doses are sufficient to cause prolonged erections in eunuchs, it is concluded that testosterone propionate has no effect on impotence due to psychological disturbances.

I am indebted to Messrs. Ciba, Ltd., and N.V. Organon for supplies of testosterone propionate issued under the trade names of perandren and neo-hombreol respectively.

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MARCH FRACTURE

REPORT ON CASE INVOLVING BOTH FEET

BY

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(WITH SPECIAL PLATE)

March fracture (*pied forcé*, or Deutschlander's disease) is a condition in which fracture of the shaft or neck of the second or third metatarsal bones occurs, rarely of the fourth, without any history of trauma. Practically all the cases are unilateral, and fracture of more than one metatarsal in the same foot is exceptional. Cases in which both feet are involved are even rarer, and hence the reason for publishing this case. Further, the present case illustrates the salient features of the condition. This fracture is comparatively rare, and it is not infrequently missed. Few cases are seen in surgical or orthopaedic clinics. Thus in the Cardiff Royal Infirmary fracture clinic only two or three cases are met with annually (B. Thomas, in a personal communication). Its importance, especially at the present time, is considerable, in that it occurs in people whose occupation requires them to be about on their feet for long periods, and hence it is not infrequently seen in nurses, soldiers, and factory workers. It is characteristic of the condition that there is never any history of trauma to the affected foot, and in this respect only does it differ from the ordinary run of fractures.

Characteristics of March Fracture

Initially there is a complaint of dull aching pain in the affected foot at the end of a day's work. This pain becomes progressive, and sooner or later has to be alleviated by resting the affected foot; still later, even rest may not afford complete relief. After an interval of time varying from a few days to a few weeks oedema occurs on the dorsum of the affected foot, usually over the second or third metatarsal. This oedema is apt to be persistent. The affected metatarsal may be tender to pressure before the fracture occurs, and it becomes more so after fracture; crepitus is not constantly present. Radiography may reveal that in the early stages the fracture is not yet present, but that there is a little rarefaction of the shaft or neck of the affected metatarsal. A later radiograph will show a crack fracture with little displacement. At a still later stage a large spindle-shaped mass of callus will be seen surrounding the line of fracture. Finally, in the more advanced cases there may be only a characteristic spindle-shaped mass of callus to be seen, due to the line of fracture having disappeared owing to bony union having been effected.

In some cases several radiographs may be necessary before the fracture is detected, and in this respect Watson Jones (1940) points out the analogy to carpal scaphoid fracture, in which a number of radiographs may be required. It is, however, the appearance of a dense spindle-shaped mass of callus or bone on the shaft of the metatarsal, without a line of fracture, that has given rise to some confusion as to the precise nature of the condition or to the exact sequence of events. Thus Mercer (1936) contends that initially an osteoma forms and that subsequently a fracture occurs through it. Yet osteomata are notoriously hard structures, and no other parallel condition arises. However, Mercer (personal communication) considers it possible that a fracture may occur first and callus form around it or that callus formation may precede fracture. The latter seems unlikely, and in the case reported below the sequence of events (that is, fracture followed by callus formation) is well illustrated.

Various theories are held as to causation, but none are definitely proven. Thus spasm of muscles interfering with blood and lymph supply, local myositis, focal sepsis, loss of muscle tone from debility, etc., are all cited. According to Watson Jones (1940), however, metatarsus atavicus—a congenital shortening of the first metatarsal—is frequently a predisposing cause of spontaneous fracture of the second metatarsal bone, and, indeed, may lead to recurrent fracture in the same bone after a variable period.

Certain facts stand out. The subjects are usually young and healthy, and they have spent long hours on their feet. There is no history of trauma. The strain of long standing or marching appears to be the precipitating factor. The onset is gradual, the fracture being preceded by pain, swelling, and tenderness. Moreover, pain may persist for some time after the fracture has united.

Case Report

A probationer nurse aged 23 complained of pain (which interfered with her sleep) and swelling of the dorsum of the right foot in December, 1938. These symptoms were present for two weeks before she reported for examination. Three months previously she had had a swelling of the dorsum of the left foot with pain, but she did not report this. There was no history of trauma. Her health was otherwise good and she had had no previous illnesses of significance.

An examination revealed oedema on the dorsum of the right foot over the metatarsal bones and tenderness to pressure. A radiograph disclosed a transverse "crack" fracture of the middle of the shaft of the second right metatarsal bone, without callus formation. In the left foot, which was affected three months previously, there was a spindle-shaped mass of callus surrounding a uniting fracture of the shaft of the third metatarsal bone (Plate, Fig. 1). Elastoplast strapping was applied to the feet, and the patient was kept in bed for three weeks and then sent home to rest. She subsequently returned to work as a nurse and has experienced no further trouble.

Ten months later a further radiograph (Fig. 2) of the feet was taken: it showed, on the left side, disappearance of the line of fracture, considerable diminution of the callus, and thickening of the cortex of the shaft of the bone. On the right side the line of fracture had disappeared, and there was a dense fusiform mass of ossified callus, whereas in the previous radiograph there was no callus.

Discussion

Though most cases occur in young adults, yet in ten cases reviewed by Meyerding and Pollock (1938) the average age was 40 years, the oldest patient being 61 and the two youngest being nurses aged 19 and 21. Of this series only three patients were males, one of whom was a doctor aged 34. Savés (1936) reported a case of bilateral fracture of the second metatarsal bones in a young soldier. A case of march fracture of the second and third metatarsals of the left foot was reported by Monteith (1934): there was fracture without callus of the third metatarsal, and an old fracture of the second metatarsal with good callus formation.

In regard to these cases generally, the severity of pain varies from a mild to severe persistent dull ache. The occurrence of oedema of the dorsum of the foot is constant, and is associated with pain and tenderness to pressure over the affected metatarsal. The interest of the

case reported here is that the second fracture occurred two months after the first, and the sequence of events (that is, fracture followed by callus formation) is well illustrated.

The condition does not appear to be so generally well known as it ought to be. It has been confused with osteoma, syphilitic periostitis, and sarcoma, and mistaken diagnosis has had unfortunate sequelae. Thus Watson Jones (1940) cites a case in which a wife instituted divorce proceedings, as she was told the lesion was a syphilitic periostitis. Straus (1932) reports a case in which the entire second metatarsal was excised because of an erroneous diagnosis of sarcoma. Dodd (1933) reports the case of a woman who had a classical Lisfranc amputation of the right foot performed for a march fracture of the second metatarsal mistakenly diagnosed as a sarcoma.

Such errors should not occur if due attention is paid to the various *x*-ray appearances which may be seen, especially that of a spindle-shaped mass of callus or bone on the shaft of the metatarsal, without a line of fracture. The clinical history with absence of trauma is characteristic. Treatment consists in the application of a walking plaster for a month, followed by strapping and foot exercises. The prognosis is good.

My thanks are due to Dr. W. Davies of Sully Hospital, Glamorgan, for permission to publish this case, and to Professor Duguid for help and criticism.

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REMOVAL OF A TERATOMATOUS "TWIN"

BY

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(WITH SPECIAL PLATE)

The presence of teratomata in and about the human body is not uncommon, but those displaying elements from the three embryonic layers and developing well-formed organs are distinctly rare. The following case presented several features of interest.

Case Record

The patient was a female aged 5 weeks, the fourth child. (The previous child was said to have been anencephalic.) She was admitted to Addenbrooke's Hospital with a large mass, 6 by 4 by 3½ inches, over the lower lumbar and sacral regions (Fig. 1 on Plate). It presented two dimples, into one of which a probe could be passed for two and a half inches. There was a nipple-like process half an inch from this opening. The child was otherwise well formed and the movements of her lower limbs were normal. There did not appear to be any impulse in the tumour when the baby cried or strained. A radiograph showed a well-marked plaque of bone not unlike a foetal lower jaw or the upper end of the ulna. It also revealed a spina bifida of the lower lumbar region.

The diagnosis of teratoma was made and it was decided to remove it under local anaesthesia. This was carried out by one of us (V. P.). Sixty c.cm. of 0.5% novocain were injected round the base of the tumour. A rather unnecessarily large flap of skin was fashioned and undercut before the tumour was defined, after which a layer of fat which surrounded the mass was incised and the separation of the twin begun. A cavity was opened and a somewhat disconcerting display of intestines was revealed. A short examination, however, reassured us that they belonged to the teratoma and not to the host. Towards the midline of the patient a meningeal sac was opened and the lumbar spinal cord was clearly seen well above the cauda equina.

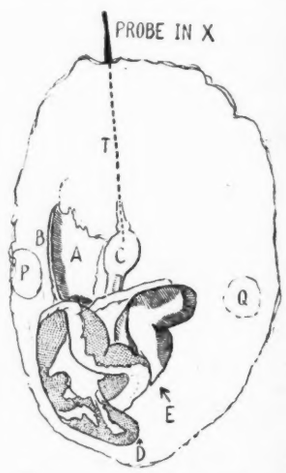
Soon after the removal of the tumour it was noticed that the patient's legs had become flaccid and were very largely paralysed. As this rapidly passed off and by next day the child was moving the legs in a perfectly normal manner it would appear probable that the local anaesthetic had trickled into the theca after that membrane had been opened and had become, in fact, a spinal anaesthetic. The child stood the operation well, although somewhat shocked from the loss of so large a proportion of its own bulk. In view of the shock no time was wasted in trimming the rather large skin-flap, and the wound was sewn up as quickly as possible.

The next day the redundant skin was seen to be bulging, and a pair of sinus forceps introduced through the scar evacuated a large quantity of cerebrospinal fluid. For ten days leakage continued unabated. In spite of this, and because of the unremitting care and attention which she received from the sister and the nursing staff, the child made steady progress, except for a small ulcer in the thigh which followed an intramuscular injection of sulphapyridine (given as a prophylactic during the leakage of cerebrospinal fluid). This, however, healed in due course and the child was discharged normal in every way.

Characteristics of the Specimen

The following is the report (by L. C. M.) of the examination of the specimen:

External.—The specimen is covered externally by an oval area of skin 5½ by 3 inches. There is a blind dimple situated 2 inches from one end of the oval of skin, and at 4 inches is an excrescence. Half an inch from this is an opening, flanked by two small protuberances, ? mandibular processes. The opening communicates via an apparent oesophagus with the stomach C (see diagrammatic key to Fig. 2 on Plate). Lying beneath the oval skin is a layer of fat varying in thickness from 1½ to 3 inches.



Diagrammatic key to Fig. 2 on Plate.

Internal (Fig. 2).—Lying in the mass of fatty tissue is a smooth cavity approximately 2 by 1½ inches lined by either cartilage or bone, which is partially shown at A. There is a definite firm overhanging ridge B. The cavity contains a primitive stomach (C), communicating with the surface of the tumour at the dimple X by a tube T—presumably the oesophagus. (Probe in X passing into stomach.) The stomach is connected to coils of large intestine (E), about 7 inches in total length, which terminate in the blind caecum D. The large bowel is covered by fatty deposits and shows definite taenia. No trace of liver, spleen, or genital organs can be found by simple dissection, although two small buds distal to the stomach may possibly represent rudiments of liver and pancreas. In the regions P and Q there are apparent extensions of the osteo-cartilaginous roof of the cavity A; but elaborate dissection would have been necessary to display their form. So far as can be seen all three embryonic layers are represented, and the assumption is that this is a partially formed twin.

Commentary

The following points of interest are raised by this case:

First, the advisability, or the reverse, of operating at so early a date. Here was a child of five weeks

with a tumour mass, which it was proposed to remove, three-quarters of the size of its head, and shock was likely to be, and indeed proved to be, considerable. On the other hand, if the child was allowed to grow, so, too, would its attached twin, and a proportionately more extensive operation would be called for, probably necessitating general anaesthesia. It was perhaps remarkable that so large a mass did not result in any difficulty at birth: but the mother was young and the child her fourth. Forceps were not used.

Secondly, the leakage of cerebrospinal fluid.—Although every attempt was made to close the spinal theca, a prolonged leakage of cerebrospinal fluid occurred. The fact that this did not become infected was primarily due to the very skilful and sympathetic nursing that the child received. It is, however, possible that the redundant skin flap, at first thought to be a disadvantage, may have partially contributed to this lack of infection by carrying the suture line well over to the left and nearly two and a half inches away from the midline.

Thirdly, the recognition of the spinal anaesthetic effect arising from local anaesthesia after the theca was opened and disappearing within a few hours.

BENIGN CYST OF THE PAROTID GLAND

BY

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(WITH SPECIAL PLATE)

Parotid tumours are common, but simple cysts of the parotid gland are rare. Very few cases of the latter are reported in the literature, and fewer still of cysts communicating with Stensen's duct. Out of 17 cases of tumour of the parotid in my series 10 were benign mixed tumours and 5 malignant tumours, one of which had undergone cystic degeneration. Only 1 among the 17 cases was a simple cyst communicating with Stensen's duct.

The origin of simple cysts in the parotid gland is speculative. Dermoid cysts and cysts of branchial origin may occur, but very few cases are reported in connexion with the parotid gland. In a cyst of branchial origin the existence of lymphoid tissue underneath the stratified epithelium is diagnostic. Cysts may occur in connexion with benign adenomas, and the pathology of these adenomatous structures may be the same as that described by Lenthal Cheatle (1931) in regard to breast tumours. In rare cases fairly large cysts in the parotid gland have been described by Hertzler (1937). With these the histological picture is always of an adenomatous structure with a cystic formation due to association with adenomatous neoplasia or to degenerative change leading to cystic formation in an adenoma or blocking of a main duct. Vitamin A deficiency has also an important bearing upon the nutrition of the epithelium of the lining membrane of the salivary gland. In experimental animals Wolbach and Howe (1925) have shown keratinizing metaplasia in mucous membrane, gland duct, and secreting epithelium in vitamin A deficiency. In children Wilson and Dubois (1923) have demonstrated lesions of xerosis and keratomalacia and also metaplasia of the lining membrane of trachea, bronchi, pancreatic ducts, uterus, and salivary glands. In cases of vitamin A deficiency a metaplasia of the epithelium of the duct to the squamous type, with retention of secretion inside the cavity, may occur. In these cases such changes are general and not localized to one gland. This factor has to be borne in mind in India, as vitamin A deficiency is common in young and old. There is no suggestion, however, of such a deficiency in the following case, in which a cyst communicated with Stensen's duct.

Case Record

A Hindu male aged 60 was admitted with a swelling of two months' duration in the region of the parotid gland and extending into the left cheek. It began as a small swelling in the region of the parotid. He found that the swelling increased in size with the taking of food, but on applying pressure over it the saliva flowed into the mouth and the swelling was reduced to its original dimensions. He was treated by indigenous methods consisting of the application of irritants inside the mouth. Subsequently the pain and swelling increased. He could not without pain empty the swelling by pressure as before. On admission to hospital he was found to be healthy except for the swelling, which on examination was seen to extend from the front of the ear to half an inch behind the angle of the mouth. It was fixed to the parotid gland. It was warm to the touch and ovoid in shape. Its margins were easily defined. Its surface was smooth, and its consistency firm at the periphery and soft and cystic at the centre, with fluctuation. The skin over the swelling was adherent and tender. There was slight limitation of movements of the temporo-mandibular joint. On opening the mouth the left side of the cheek was dry, and on deep pressure, which caused great pain, a drop of yellowish fluid could be squeezed out. The opening of the left Stensen's duct inside the mouth was retracted. After dilatation lipiodol was injected, and a radiograph showed the lipiodol in the cavity in droplets revealing the communication with Stensen's duct (Plate, Fig. 1). Under general anaesthesia the cyst was removed by a transverse incision parallel with the nerves and blood vessels over the most prominent part of the cyst. The cyst wall, which was thin and adherent to the skin, burst during dissection and was found to contain yellow fluid. At the anterior margin of the masseter the cyst was fixed to the duct by a narrow stalk. This was cut across and the cyst removed. A pedicle ligature was applied round the stump, held by forceps near Stensen's duct, and the wound was sutured in layers. After removal of the cyst a persistent parotid fistula was feared, but the wound healed by first intention without formation of a parotid fistula.

Pathological Report.—Section showed that the cyst wall was lined by stratified epithelium, with fibro-fatty tissues in places. No lymphoid tissue was found underneath. There were gland tubules suggestive of its origin from the parotid gland. Nothing was observed that suggested a branchial origin (Fig. 2).

The patient on inquiry after one year states that he is perfectly fit, with no recurrence of the swelling.

Points of Interest

A case of simple cyst communicating with Stensen's duct is reported.

The mode of origin of this cyst is difficult to appreciate, but it is presumed that, being a simple cyst communicating with Stensen's duct, and having some glandular structure round the periphery of the duct without any evidence of lymphoid tissue underneath the stratified epithelium, it began as a cyst in an adenoma arising near Stensen's duct from the glandular structure at the socia parotidis communicating with the duct.

My thanks are due to Dr. T. Bhaskara Menon for his pathological report and photomicrograph.

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A CASE OF GLOMUS TUMOUR

WITH OBSERVATIONS ON VARIATIONS OF PAIN WITH TEMPERATURE

BY

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Late House-physician at University College Hospital

(WITH SPECIAL PLATE)

The following case of subungual glomus tumour was seen at University College Hospital, and the variations in the pain with changes of temperature were investigated.

Case History

The patient, a single woman aged 38, had suffered from pain in the left ring-finger radiating up the arm to the shoulder for ten to twelve years. The attacks of pain had become more frequent recently, and the patient was seldom free for more than a day. No injury to the finger could be remembered. Repeated examinations for cervical ribs had been made; these proved negative.

The pain started in the nail of the left ring-finger and spread up the front of the forearm and outer side of the arm to the shoulder and occasionally up the side of the neck to the jaw. Squeezing or accidentally knocking the finger gave intense pain of a burning type for several seconds. The pain was provoked by cold and was also worse in winter; it was alleviated by warmth, but heat brought on a throbbing type. The patient also complained of tenderness after experiencing bad pain. This was on the inner side of the middle finger and over the whole of the ring-finger and little finger, the ulnar area of the hand, and up the ulnar side of the forearm to the elbow. These areas were tender to light friction, and movement of the clothing led to soreness.

Examination showed that in the centre of the ring-finger nail there was a small purple patch, 3 mm. long and 2 mm. broad, very sensitive to pressure, surrounding parts being less sensitive. The surface of the nail was quite smooth and showed no distortion. There was no apparent atrophy and no unnatural moisture of the finger; the skin colour was normal. The patient had first noticed the spot twelve years previously, and it had continued unchanged. She stated that her fingers were nearly always cold.

The following were the effects of immersing the left hand in a water bath at various temperatures:

Before Immersion.—No throbbing or pain. Local pressure or tapping the nail produced local pain only, without radiation.

In Water at 14° C. for 60 seconds.—Patient would not tolerate a longer immersion or allow of immersion in water at a lower temperature on account of the severe ache in the ring-finger and little finger and on the ulnar side of the biceps. There was some hyperalgesia to light touch on the ulnar side of the ring-finger.

In Water at 20° C. for Four Minutes.—Slight ache in the ring-finger only; no hyperalgesia.

In Water at 25° C.—Aching quite gone after four minutes.

In Water at 30° C.—Complained of slight fullness in the ring-finger; pressure produced local pain only.

In Water at 35° C.—Still complained of feeling of fullness; pressure gave local pain only.

In Water at 39° C.—Complained of throbbing pain in the nail of the affected finger. Pressure on the nail now caused pain, which radiated up the ulnar side of the forearm to the elbow.

In Water at 45° C.—This gave the same effects.

Reflex vasodilatation was produced by immersing the right hand in water at 47° C. Before immersion the left hand showed no capillary pulsation; there was no pain or abnormal sensation, and pressure produced local pain only. When the right hand had been immersed for sixteen minutes there was capillary pulsation in all the finger-tips of the left hand. Throbbing was felt in the whole hand and was not increased in the affected finger. Pressure on the nail produced pain, which radiated up the finger. A radiograph of the affected digit showed a small excavation on the dorsum of the terminal phalanx.

Operation was performed by Prof. R. S. Pilcher on May 26, 1939, with a nerve-block anaesthesia round the base of the finger. A small piece of nail was removed (about one-third) and the tumour shelled out quite easily, the pedicle being identified in the process. Microscopical examination revealed a typical glomus tumour (see Plate).

Post-operative progress was as follows: On May 27 the patient complained of two types of pain in the arm. One was a shooting pain in the middle, ring, and little fingers radiating up to the palm only, less severe than the pre-operative pain, but without tenderness when pressing on the finger-tip. There was also a constant burning pain in the upper forearm, the lateral aspect of the arm, and over the pectoralis major. On May 30 there were still the same pains, but less severe. On May 31 occasional shooting pains were felt, also a burning pain in the finger, in the arm, and over the front and back of the chest, accompanied by some hyperalgesia. On June 2 the burning pain had gone: there were occasional shooting pains only. On July 26 the nail had not yet regrown and the finger was slightly tender to the touch. There were now no shooting pains, but a little ache in the finger and arm was experienced after using the arm.

Discussion

The lesion seemed to cause most discomfort at high and low temperatures; this is in keeping with Grant's (1930) observation that the arterio-venous anastomoses from which these tumours are derived and which he studied in rabbits are open only at high and low temperatures. Why high temperatures should produce a throbbing and low temperatures an ache is not easily explained.

The lateness of the diagnosis may be emphasized, the patient's case having been investigated over a period of twelve years. The widespread tenderness of which she complained does not seem to be a common accompaniment of these lesions. The post-operative remnant of pain is in keeping with the two cases of Stabins, Thornton, and Merle Scott (1937), in which pain persisted for three and four months respectively. Vasodilatation of the affected hand has been mentioned by these three authors, and Kolodny (1938) reported a case in which stimulation of the lesion produced sweating of the affected digit. The present case gave no evidence of any such change: there was no unnatural moisture of the digit, and the fingers were cold.

Summary

A case of glomus tumour is reported with widespread tenderness in addition to widely radiating pain. The variations of pain with temperature were investigated.

I have to thank Sir Thomas Lewis, Dr. F. M. R. Walshe, and Prof. R. S. Pilcher for permission to publish this case, and Dr. Freudental for the section.

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E. Nobel (*Ann. Pediatr.*, 1940, **155**, 160), who records two illustrative cases in a boy aged 4 and a girl aged 12, maintains that enlargement of the spleen is by no means a constant feature in Still's disease. According to him there is no causal connexion between Still's disease and tuberculosis, as suggested by Kienböck. Repeated examinations of the blood during many months show that normal leucocyte counts may alternate with marked leucocytosis. He suggests that a deficiency of vitamin B_1 plays a much greater part in the causation of Still's disease and primary chronic arthritis in children than is generally recognized, as he has found that treatment with the anti-neuritic vitamin is very successful in such diseases, as well as in polyneuritis, gastro-enteritis, neuralgia, and sciatica.

Clinical Memoranda

A Case of Neurofibromatosis or von Recklinghausen's Disease

(WITH SPECIAL PLATE)

The following case may be considered interesting enough to warrant publication.

CASE NOTES

The patient was a small spare man aged 60, by occupation a gardener. His whole body is covered with subcutaneous painless nodules, front and back views of which are shown in Figs. 1 and 2 of Plate. These nodules occur on the hands and feet, except the palms and soles. Some nodules are present at the tips of the fingers. Scrotum and penis, chin, lips, scalp, neck, and ears are affected. The only regions that are free are the nose and cheeks, palms, and soles. The arrow in Fig. 2 points to the site from which a fibro-sarcomatous nodule the size of a large walnut has been removed locally on two occasions, recurrence having taken place after two years.

The number of neurofibromata in this case has steadily increased during a period of thirteen years' observation. Ten years ago his face and hands were free. Malignancy first occurred at the age of 58. He is unable to state when the lumps first appeared, but he had a fair number at the age of 14 years. At the age of 21 there were no lumps above his collar or on his hands. At this time he proposed to a young lady, and his suit was accepted. Two children, now adults, resulted from the marriage, and both are free from the disease. Describing the occasion of the marriage, his wife said: "J. looked all right above his collar; but on the first night of our honeymoon I went straight home to mother and remained there with the shivers for a fortnight."

Inquiry into the family history disclosed that his father, grandfather, and two brothers all suffered from the disease, but his sister was free from it. He had had bilateral inguinal hernia, which was cured by operation some ten years before the photograph was taken.

Wanganui, New Zealand. H. KENRICK CHRISTIE, F.R.C.S.

Combined Extra-uterine and Intra-uterine Pregnancy

It may be of interest to record the following case, in which a woman with a coincident intra-uterine and extra-uterine pregnancy suffered first from a tubal abortion of the ectopic gestation and then went to term with the uterine gestation and delivered herself of a healthy child.

CASE REPORT

The patient, a married woman aged 35, had had four previous pregnancies, the most recent one being twins a year and nine months previously.

She was first seen by one of us (J. H.) on July 20, 1939, when she gave a typical history of a ruptured ectopic gestation some forty-two hours previously. Her last period had been on June 15. On July 18, when her period was overdue by several days, she was seized with acute abdominal pain, which became worse after she took some castor oil. The pain, colicky in nature, was felt mainly on the right side, and it shot up to the right shoulder-tip. Later it extended to both shoulder-tips. There was no vaginal bleeding. She was said to have looked very pale, and to have broken out in cold sweats with the pain. She was admitted to the gynaecological ward of the Dundee Royal Infirmary on July 20. By this time the acute symptoms had abated. She was a small thin woman, and lay quietly on the trolley, but with a pallor suggesting an internal haemorrhage of fair degree. The pulse rate was 84 and the temperature 97° F. Generalized pain, not of a severe character, was complained of over the whole abdomen. The abdomen was slightly distended and very tender all over. Shifting dullness was present in the flanks. Vaginal examination caused a good deal of pain, and a boggy mass was felt in the posterior fornix. A diagnosis of ruptured ectopic gestation was made, and an operation performed an hour later. It was not considered necessary to administer intravenous fluids before operation, as the patient's general condition was satisfactory.

Operation.—The abdomen was opened by a right para-median incision. Dark blood clot was seen shining through the peritoneum; the abdominal cavity was full of blood clot. The left Fallopian tube was found to be the site of an early pregnancy without rupture, and the fimbriated opening was partly plugged by clot. The case was obviously one of tubal abortion. The tube was removed; the corresponding ovary, which was healthy, was left *in situ*. Microscopical examination of the tube confirmed the diagnosis of ectopic tubal pregnancy. The right tube was the site of a small cyst, which was punctured and stitched. The uterus was somewhat enlarged and tense. The abdomen was closed in layers in the usual way.

The patient's condition at the end of the operation was fair, and she was given 100 c.cm. of 50% glucose solution intravenously, with marked improvement. Apart from a rapid pulse rate for the first four days after operation convalescence was uneventful. An iron-containing preparation was given for the anaemia, and she was discharged home well on August 9.

On October 10 the patient, who had been evacuated to the country on the outbreak of war, wrote: "I underwent an operation on July 20, 1939, for a slight pregnancy and I had a tube taken out. . . . Well, I am still pregnant, and I was wondering if I came to see you would you explain what I should do." She was sent for, and when seen on October 16 she was in good health and about four months pregnant. She intended to have her baby in the country, and ante-natal care was advised.

However, she returned to Dundee in February, and as her home was near Maryfield Hospital she attended the ante-natal department and booked for her confinement there. Her first attendance was on February 6, 1940, when she was found to have a normal seven and a half months pregnancy, the foetus presenting by the vertex. Blood pressure, urine, and pelvic measurements were all normal. She attended on three further occasions at fortnightly intervals, and her pregnancy was found to be progressing normally. On March 23 she was admitted with false pains, which soon passed off. She was kept in hospital. True labour pains began on April 4, and a healthy female child weighing 8 lb. was born the same day, after an easy labour of eight and a half hours, as a "left occipito-anterior." The puerperium was uneventful, and mother and child were discharged home well on April 14. When seen three weeks later they were both well.

Mitra (1940) has recently published a survey of all cases of simultaneous intra-uterine and extra-uterine pregnancy recorded in the world literature to date, amounting to 306 cases in all. References to several cases similar to ours were quoted. Other results mentioned might be summed up as those in which (1) abortion of the uterine ovum took place; (2) hysterectomy was performed for suspected pathological uterine enlargement at the time of operation for the ectopic gestation; and (3) both pregnancies progressed to term before discovery of the extra-uterine one. This particular case was interesting in that there was already a history of twin-bearing and that at no time either before or after operation was there any suggestion of a threatening miscarriage.

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H. LUX (*Thèse de Paris*, 1940, No. 50) states that myeloid leukaemia is the most common form of leukaemia found in radiologists, as is shown by the fact that of twenty-three cases hitherto recorded sixteen were examples of myeloid leukaemia as compared with only seven of lymphatic leukaemia

Reviews

DEVELOPMENT OF PERSONALITY

The Integration of the Personality. By Carl G. Jung, M.D. Translated by Stanley M. Dell. (Pp. 313; illustrated. 15s. net.) London: Kegan Paul, Trench, Trubner and Co., Ltd.

The integration of the personality means for Dr. Jung the attainment of a *modus vivendi* between the conscious ego and the chaotic unconscious. Somewhat cynically, if perhaps truthfully, he remarks: "Fortunately in her kindness and patience Nature has never put the fatal question as to the meaning of their lives into the mouths of most people."

The publishers claim for this book that it is less technical and more suited for the general reader than Dr. Jung's other works; we cannot say that we have found it so. The complaint often urged against him that at times he seems to retreat into the clouds of mysticism may well be countered by the truism that life is mysterious and cannot be adequately explained in terms of conditioned reflexes and behaviourism. But on this occasion the author seems to dwell unduly in the clouds, so that it is a relief when in the last chapter, entitled "The Development of Personality," he descends to earth and makes some pertinent remarks concerning education. Here he considers the emphasis is wrongly placed upon the child to be brought up without regard to deficient upbringing of the adult educator; we cannot correct in a child a fault that we ourselves still commit. Children are not so stupid as we believe, and notice only too well what is genuine and what is not. "Education to personality" is a task beyond the power of most educators. Everything could be left as it was if a new way of life were not absolutely demanding to be discovered and was not visiting humanity with all the plagues of Egypt until it is found. Instead of being exposed to wild beasts, tumbling rocks, and inundating waters man is exposed to-day to the elemental forces of his own psyche, and so he seeks with more intensity than ever for personal leadership. This is an indestructible human need, but once tradition has been sufficiently lopped off by the revolutionary, unhistorical, and therefore uneducated inclinations of the new generation, leadership is the more fanatically defended the more unsuitable it is.

It is perhaps significant that this last chapter was delivered as a lecture in Vienna as long ago as 1932, so that it is in parts indeed prophetic, while the other sections, written later, though printed earlier in the book, suggest that the tendency of the author to veil his meaning in obscurity has increased. Nevertheless they contain some interesting discussions; thus it would be generally agreed that man's mind works in symbols, and so powerful do these symbols become that there is a fatal tendency to mistake the symbol for the substance. In course of time the symbol comes to have a different connotation for the new generation, which not only revolts against the symbol but is in danger of rejecting the underlying truth. But Dr. Jung carries the idea further by the interesting suggestion that a dogmatic symbol is employed as a protection against deep personal experience, for dogma advises us not to have dealings with the unconscious. This is worth pondering over as explaining much in the history of religions.

Always prepared to receive new ideas, Dr. Jung has recently become fascinated by the history of alchemy, from noting the similarities between the symbolism adopted by his patients and by the old alchemists. He was led to the conclusion that the interest of the alchemist in his subject was really psychological and not a groping after science at all. We would also direct the reader's attention to a valuable discussion of the nature and manifestation of the "anima" (p. 17 et seq., and also p. 79). His final conclusion may be expressed thus: "While our intellect has been achieving colossal things our spiritual dwelling has fallen to pieces."

INJECTION TREATMENT

Injection Treatment of Hernia, Hydrocele, Ganglion, Hemorrhoids, Prostate Gland, Angioma, Varicocele, Varicose Veins, Bursae, and Joints. By Penn Riddle, B.S., M.D., F.A.C.S. (Pp. 290; 153 illustrations. 27s. 6d. net.) Philadelphia and London: W. B. Saunders Company. 1940.

This book makes a very comprehensive review of the present status of injection treatment for a number of surgical conditions. It is eminently practical, and the reader can count upon finding minutiae of treatment in detail reinforced with most adequate illustrations. Especially good is the handling of the injection treatment of hernia, where no extravagant claims are made and proper attention is given to the correct selection of cases. There has been some reckless writing on this subject recently, and Dr. Riddle's survey provides an excellent corrective. With this book to consult, this method of treatment comes within the comprehension of any enterprising practitioner.

In the treatment of varicose veins the methods advocated are thoroughly up to date and the value of ligation of the two saphenous veins flush with the main vein as an adjunct to the injection treatment is given its full importance. An operation is recommended for those cases which resist even this combined treatment; this consists in raising a large full-thickness skin flap below the knee and dealing with perforating veins as they are exposed on the under surface of the flap. This operation, although drifting back to the larger operations of the past, might occasionally be indicated in cases in which complications persist in spite of the usual ambulatory injection-ligation treatment. The reviewer feels compelled to protest against the advocacy in this book of injection of the veins while the patient stands. Both injector and patient sway unsteadily in this position, misplaced injections occur more frequently, and, as there is quite a fair proportion of patients who faint when injected in this position, much embarrassment may be caused.

In the treatment of piles the author favours the injection of the body of the pile, and fails to mention the high injection so much favoured in this country on account of painlessness during the injection and in the period of reaction in the subsequent week. The ingenious notion is put forward with regard to fissure and anal pruritic eczema that these bear the same relation to the varicose haemorrhoidal veins as do gravitational ulcers and eczemas of the leg to saphenous incompetency. A chorus of joy from many sufferers from pruritus ani and from the doctors who suffer from these cases would arise if this suggestion could be proved to be true.

APPLIED CHEMISTRY

Thorpe's Dictionary of Applied Chemistry. By Jocelyn Field Thorpe, Kt., C.B.E., D.Sc., F.R.S., F.I.C., and M. A. Whiteley, O.B.E., D.Sc., F.I.C. Assisted by eminent contributors. Fourth edition (revised and enlarged). Volume IV. (Pp. 603. 70s. net.) London, New York, Toronto: Longmans, Green and Co.

The fourth edition of *Thorpe's Dictionary of Applied Chemistry* is distinguished by the fact that its contents include the very newest information on the subjects treated. Many parts of the monographs give the impression of being the latest current review of advances in chemistry. The fourth volume now before us runs from Digallic Acid

to Feeding Stuffs. Every monograph is comprehensive of all the different aspects of interest.

The original *Thorpe's Dictionary*, while it covered a wide field, was directed more particularly to matters of industrial and technical importance, but the new edition discusses therapeutic agents as well, and treats of them with pharmacopoeial precision. Even physiological effects are described wherever these enter into important consideration. Trinitrotoluene, for example, is one of the several substances comprised under "explosives," and under "trinitrotoluene" we find among several subtitles relating to its properties the heading "Physiological Effects." We observe in passing that this article is as fully informative in a general sense as a special treatise on the subject could be expected to be.

It is gratifying to find the chemical constitution of complex substances, such as emetine and ergosterol, set out in the expanded form. The monograph on ergot of rye is a fair example of the thoroughness with which the work of revision has been done. The information under this heading covers numerous branches of interest—historical, commercial, analytical, chemical, and pharmacological; it describes the several active alkaloids in detail and their constitutional relation to certain inactive alkaloids; it gives also an account of the non-alkaloidal constituents, including colouring matters, and recites instances of ergotism among people whose diet included grain containing ergot.

This work will be of great consultative value to a wide range of readers.

STILLBIRTH AND NEO-NATAL DEATH

Fetal and Neonatal Death. A Survey of the Incidence, Etiology, and Anatomic Manifestations of the Conditions producing Death of the Fetus in Utero and the Infant in the Early Days of Life. By Edith L. Potter, M.D., Ph.D., and Fred L. Adair, M.D. (Pp. 207; illustrated. 9s. net.) U.S.A.: University of Chicago Press; Great Britain and Ireland: Cambridge University Press.

"Why did the baby die?" is a question that is being asked continually by disappointed mothers the world over. An adequate reply is not always easy to give, but if the foetal and neo-natal death rates are to be reduced the correct answer is as important to the doctor as to the mother. The wise man learns by his mistakes, but greater wisdom is revealed by the man who profits from the mistakes of others, and this new little book can be warmly recommended to all doctors practising obstetrics who would lay claim to this greater wisdom.

The authors have given an excellent survey of the incidence, aetiology, and pathology of those conditions which produce intra-uterine foetal death and neo-natal death. Statistics submitted are based on figures obtained in the United States, but the problems to be solved are not confined by national barriers. Prematurity, birth injury, infection, anoxaemia, and exposure to an unfavourable environment are indicated as the major causes of death, and it is pointed out that if an accurate picture is to be obtained of the mortality in an obstetric hospital stillbirths and neo-natal deaths must be analysed together. As a background to the discussion of stillbirth and neo-natal death a well-summarized and clear account is given of the normal foetus and infant. This is followed by a chapter dealing with post-mortem technique, after which the causes of foetal and neo-natal death are reviewed. The book concludes with an account of special pathology in which the lesions of individual organs are considered in more detail.

Although primarily of pathological interest this book contains so much information of statistical and clinical value that it should be read by every obstetrician and senior student.

THE FEMALE PELVIS

The Anatomy of the Female Pelvis. By F. A. Maguire, C.M.G., D.S.O., M.D. Ch.M., F.R.C.S., F.R.A.C.S., F.R.C.O.G. Third edition. (Pp. 162; illustrated. 10s. 6d.) Sydney and London: Angus and Robertson, Ltd.

This book by Dr. F. A. Maguire, of the University of Sydney, Australia, has reached a third edition. It is a short summary of the main anatomical facts of which a practical knowledge is required by students preparing for an examination in midwifery, or by obstetricians and gynaecologists. In his preface the author states that "the third edition of this work marks an advance on the previous two editions by the introduction of thirty-five illustrations." These figures are mostly semi-diagrammatic drawings, and as such serve their purpose well and constitute an essential adjunct to the descriptions of the text. The numbers and indicating lines leading to the organs and parts shown in the illustrations are arranged in an anti-clockwise fashion round each figure and the same order of the numbers is adhered to in the captions below. This method might, we think, be improved by adopting the numerical order for the caption—thus in place of 20, 12, 11 the order in the caption would read 11, 12, 20—and time would be saved in searching for any particular number; or, better still, the names of parts might be printed at the outer end of each indicating line. The scope of the book is, with only a few exceptions, limited to the description of the gross anatomy of the pelvic organs, and no adequate account or illustration is given of the microscopic structure of the organs and tissues, and very little notice is taken of the changes which take place in the various parts during the stages of growth, involution, and the periodic phases of functional activity. The two final chapters of the book consist of a discourse on applied anatomy and some excellent practical remarks on the physical examination of the pelvic organs.

Notes on Books

Dr. ALFRED T. SHOHL in his monograph *Mineral Metabolism* (London, Chapman and Hall, 30s.) has collected and summarized the scattered literature of a subject that is of great importance in both physiology and medicine. The subject covers a very wide field: mineral intake and balance is an important branch of nutrition; water and chloride excretion and balance are fundamental factors in the interpretation both of shock and of kidney functions in health and disease; metabolism of iron and of iodine are of basic importance in the study of anaemia and of thyroid disease; finally the mineral exchanges are influenced by several of the endocrine glands. The extent and variety of the material make mineral metabolism very difficult to summarize and few persons have hitherto attempted this task. Consequently Dr. Shohl's monograph is of exceptional value since it presents in a single volume a mass of information collected from the literature of many different branches of medical science. The magnitude of the field of knowledge reviewed has obliged him to deal briefly with extensive and controversial subjects such as rickets, caries, iodide deficiency, etc., but he gives references to the most important recent work in all cases.

There is little need to criticize such a well-known masterpiece as *Cunningham's Manual of Practical Anatomy*, the tenth edition of which has been revised by Prof. J. C. BRASH and Dr. E. B. JAMIESON. This book has been the trustworthy guide and companion for over fifty years of a succession of British medical students. The editors of each edition have, without altering the plan of the original book, left their individual impress on the work, and they have gradually built up upon the old foundation a monument of accurate observations and facts, which have been recorded by some of the ablest writers, draughtsmen, and photographers in the land. Perhaps the

most noteworthy additions to the present volume (Thorax and Abdomen, price 15s.) are the excellent radiographs of Dr. Robert McWhirter, which not only afford a realistic picture of conditions in the living subject as a supplement to observations on the cadaver, but set a standard of efficiency in the production and reproduction of *x*-ray photographs which it will be difficult to excel and will serve as a valuable stimulus to later workers in this field. The publishers are the Oxford University Press.

The second volume of the third series of the *New International Clinics*, edited by Dr. GEORGE MORRIS PIERSOL (Philadelphia, Montreal, New York: J. B. Lippincott Company, 60s. net the set of four volumes), consists of three parts, comprising respectively original contributions, clinics by members of the Faculty of the Ruskin Medical College, Chicago, and a review of recent progress in the study of the hypothalamus from the anatomical, physiological, and clinical aspects. Among the original contributions may be mentioned the papers on empyema thoracis, thyrotoxic osteoporosis, theoretical and practical considerations on vitamin K, pellagra therapy, and fuso-spirochaetosis (Vincent's disease). The clinics deal with the following papers, among others: the surgical treatment of carcinoma, the treatment of intractable pain, glandular treatment of hypogenitalism, diagnosis and treatment of infections of the seminal vesicles, and pernicious anaemia.

Forensic Chemistry, by HENRY T. F. RHODES, is a small volume describing the nature of problems which may be submitted for elucidation to chemical diagnosis. These problems include the recognition of differences in the inks used in manuscript; the detection of evidence of falsity in counterfeit coins and notes; the recognition of traces of matter in the form of stains or smears; the identity of different kinds of dust; and other kindred matters. The book describes the methods of procedure to be followed in these examinations and is generally helpful in this respect, but the description of methods is sometimes lacking in elaboration of detail where detail is of critical importance. It is nevertheless well suited for introductory reading by those unfamiliar with the subject. The publishers are Chapman and Hall, and the price is 12s. 6d.

Preparations and Appliances

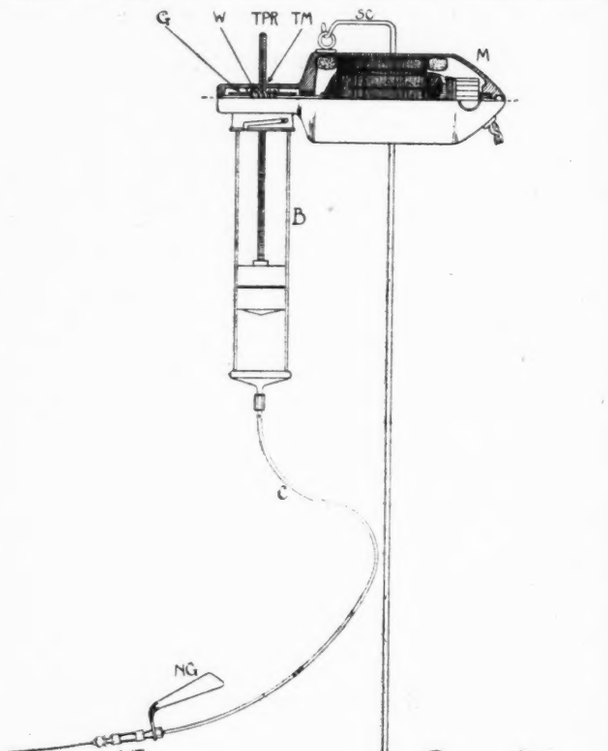
SYRINGE FOR INJECTION OF VISCOUS FLUIDS

Mr. ANGUS MCPHAIL writes: The injection intravenously or otherwise of viscous fluids such as uroselectan B and lipiodol is not unaccompanied by difficulty, especially where a fine needle has to be used. It may therefore be of value to describe a form of syringe which has effectively overcome the disadvantages of the ordinary 20-c.cm. manually operated type.

As the hydraulic resistance offered to the passage of a fluid through a tube of fine bore increases enormously with the viscosity factor of that liquid it is a common experience that the injection of viscous fluids through a fine needle can tax the utmost manual strength of the operator in driving home the piston, and, indeed, is often accompanied by the onset of finger-cramp. It was decided that to make the injection smooth and comfortable to both operator and patient the piston of the syringe should be driven home by electrical means. Naturally this meant a fairly radical alteration in the design of the syringe, and while we were at it we looked for other improvements which might be made and which might be incorporated at the same time.

A noticeable feature about the introduction of the needle into the lumen of a vein when using a 20-c.cm. syringe is the fact that the heavy loaded syringe detracts considerably from the operator's tactile sense in puncturing the vein wall and locating the lumen with the needle point. Now, if the needle is gripped in a light holder its introduction into the vein lumen is accomplished with greater ease because of the increased sensibility in the operator's hand, due to the absence of the heavy mass of the syringe.

The sketch herewith shows the instrument in use in an *x*-ray department in which many intravenous pyelograms are taken, with saving of time and increased comfort to patient and operator. It consists of a series-wound universal motor (M) of the electric shaver type, having a worm-gear head integrally moulded with its own casing. The armature shaft projects into the gear-head, carrying a fine worm (W). This drives the gear (G), whose shaft is a hollow threaded mandrel



(TM), and is borne by the two sides of the gear-head. The lower surface of the gear-head carries a standard Record syringe bayonet-cap, which is integral with the gear-head, this cap being placed, of course, concentric with the threaded mandrel. A standard Record syringe barrel and piston were obtained. The manual piston rod was removed from the piston and an equal length of plated phosphor-bronze threaded rod (TPR) substituted, the rod carrying the same thread as the mandrel and assembled as shown in the sketch.

A No. 4 size gum-elastic catheter (C) is fitted at both ends with a standard Record male and female gland as shown, the male carrying a grip (NG) to which is attached a minute length of glass-window tube (WT), this also carrying at its extremities Record male and female fittings: the intravenous needle is attached to the male extremity of the latter. For convenience the syringe is suspended from a small shepherd's crook (SC) of plated steel supported by a weighted base (BS) in which is a small transformer. On the top of the base are two push-buttons coloured red and white, the former marked "Suck," the latter "Inject." These are merely reversing button-switches, which drive the motor and impart, through the gear-head and threaded mandrel and rod, a forward or reverse direction to the piston.

Mechanically the apparatus is simple and straightforward, and as the motor is only run on short-term rating the wear and tear is negligible; furthermore, since all the bearings are self-lubricating it requires virtually no attention. The speed of the motor is set so as to empty the 20-c.cm. syringe in two minutes. Sterilization is accomplished in the usual way: the needle, the window-tube, the barrel, and the piston are sterilized by boiling and kept under spirit, and can be detached from the power-head in an instant. The gum-elastic catheter (C) is kept in formalin vapour.

BRITISH MEDICAL JOURNAL
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GAS GANGRENE

For the guidance of those engaged in the treatment of war wounds the Medical Research Council has published a memorandum entitled "Notes on the Diagnosis and Treatment of Gas Gangrene,"[1] the purpose of which is both to advocate an enlightened and uniform method of treatment and to define procedure for research. This memorandum is the work of the War Wounds Committee and the Committee of London Sector Pathologists, who have collaborated in planning to make the best use of present opportunities for research on wound infections, as well as to ensure that modern methods of treatment are used to full advantage. It defines the disease—a much more important and difficult matter than might be expected; advocates methods of prevention and treatment by surgery, serum, and drugs; and, finally, puts forward a scheme for the bacteriological investigation of war wounds which is intended to be followed not only at those centres established by the War Wounds Committee but in any laboratory in which owing to "the unpredictable distribution of casualties" important material becomes available. It should be widely recognized that every case of true gas gangrene represents a valuable opportunity in the present study, and wherever it occurs careful records should be kept[2] of the nature and extent of the infection and of its response to treatment. Such records are much more significant if they include bacteriological data, and any laboratory should be capable of carrying out the simpler first stages of the necessary investigation; cultures can then be sent to what is here described as a "reference laboratory" for full identification. It is a supreme advantage of such nationally organized research that it brings every laboratory in the country within its possible ambit, and enables the expert in a highly specialized field to take over material not directly accessible to himself from those who have access to it but are not equipped to pursue its investigation beyond a certain point.

The first necessity in dealing with gas gangrene is to be able to diagnose it. In the definition given in this memorandum due emphasis is laid on constitutional symptoms as well as on characteristic changes in the wound itself. The patient's aspect and the smell of the wound become unmistakable only by experience; a rapid pulse, vomiting, and pain are positive signs on which all can rely. It is interesting to compare the description given here with the more elaborate classification of anaerobic wound infection into five types by a similar committee working during the last war.[3] Of these five only three deserve to be called gas gangrene, and they differ among themselves only in the extent of tissue involved and in the rapidity of spread of the infection. The first two are conditions which tend to be so diagnosed, although they differ profoundly in nature and require less vigorous treatment. It should be clearly understood that gas and gangrene together in a wound do not constitute gas gangrene; this may be an unfortunate term, but it is the only one in general use for describing an acute and rapidly spreading infection, particularly of muscle, which soon involves tissues at a distance from the traumatized area. In that area itself gangrene may be due simply to loss of blood supply, and gas formation—whether shown by bubbles escaping from the wound or by their appearance in a radiograph—can be caused by comparatively harmless bacteria merely multiplying in dead tissue and lacking any dangerous capacity for invading the living. When surgical treatment has been delayed this limited local putrefaction is common, and to include it under the description of gas gangrene, and especially to reckon it in any calculation of the effects of treatment, is seriously confusing. It also needs to be understood that any dirty wound may contain anaerobic bacteria, such as *Cl. welchii*, and their detection, especially by cultivation, which reveals the presence even of very small numbers, is no proof of active infection. Such bacteria are very widespread; they vary immensely in toxigenicity and invasive power, and their mere presence in a recent wound has therefore little necessary significance.

Under the heading of treatment, the functions and methods of surgery here defined are not likely to be disputed, except that the "ruthless excision" of affected muscles is advocated rather as if the therapeutic position were unchanged since the last war. More debatable is the policy to be pursued in using antitoxin and chemotherapy. Here the best interests of the patient conflict with those of research, and hence perhaps with those of other patients in the more distant future. So clear is all available experimental evidence that antitoxin and sulphonamides together do more than either alone, that no official recommendations about treatment can do other than advocate the simultaneous employment of both. In the sphere of prophylaxis the interests of the individual patient are less clearly in question, and a case could well be made out for testing the efficacy of sulphonamide compounds alone, particularly by the new method of local application; it is nevertheless recommended that cases with dirty wounds deeply involving muscle should also be given prophylactic antitoxin. No distinction is made between sulphanilamide and sulphapyridine; the two drugs are simply bracketed as alternatives and the same dosage is recommended for both. The final section on suggested uniform methods of laboratory investigation is purely technical, and has some reference to problems of wound infection other than that of gas gangrene. It is no doubt for this reason that the collection of "pus" in bulk is advocated as an alternative to the convenient but not wholly satisfactory swab, but it might have been added that the formation of pus is not characteristic of gas gangrene, and that the proper specimen to collect in this condition is a piece of the affected muscle.

The steady stream of wounded in France during the last war, of whom a small proportion always developed typical gas gangrene, would have formed admirable material for the programme of study defined in this

[1] M.R.C. War Memorandum No. 2. H.M. Stationery Office. 1940. Price 3d.
[2] Army Form I 1241 and M.R.C. Form 201 are provided for this purpose.
[3] Report on the Anaerobic Infection of Wounds and the Bacteriological and Serological Problems arising therefrom. Special Report Series No. 39. H.M. Stationery Office. 1919.

memorandum. Whether air-raid casualties will afford the same opportunities we do not know. They are not wearing muddy uniforms when they are hit, nor are they always in dirty places, and their wounds are, generally speaking, of different distribution and nature from what we may now perhaps call the old-fashioned gunshot wound. They are not as numerous as the more pessimistic anticipated, and they are widely scattered among many different hospitals. To make anything of this material it is all the more necessary that the procedure here advocated should be adhered to exactly and generally.

EPIDEMICS AND THE GENERAL PRACTITIONER

The maintenance of the public health will play a major part in the totalitarian war in which we are now engaged —in our resistance to attack to-day, and in our victory to-morrow. Among the dangers that have to be faced in this field epidemic disease ranks high; and it is of good omen that we have come through the first year not merely without any serious outbreaks of infection but, so far as most notifiable diseases are concerned, with an incidence lower than we should have expected in time of peace. The one notable exception, cerebrospinal meningitis, has lost most of its terror since the sulphonamide compounds have brought it within the category of curable infections, given early diagnosis and prompt treatment.

So far so good; but continued freedom from major epidemics will only be secured by unremitting care and watchfulness, and it cannot be too strongly emphasized that the first line of defence, on this particular front, is manned by the general practitioner, and that no one can replace him. The best efforts of our national or local health authorities must fail unless they are based on the initiative and vigilance of those to whom the sick first turn. If the family doctor does not diagnose an infective disease in its earliest stages nobody will; and the risk to the nation at large from many types of infection can be measured with some accuracy in terms of the number of missed diagnoses during the first few days of illness. Again, the general practitioner, better than anyone else, can inform the members of a household what measures they should take to escape infection themselves and avoid conveying it to others. But if he is to do his part the practitioner must work in close co-operation with the bacteriologist and with the medical officer of health. Early diagnosis of many of the more important infective diseases depends to an increasing extent on the full and prompt use of laboratory methods, while effective administrative action must be based on information which only the general practitioner can supply. Liaison should be personal. The family doctor, the bacteriologist, and the medical officer of health should know each other and discuss their problems by word of mouth, not through the post.

As an addition to such personal contacts, though in no sense as a substitute for them, something is to be gained at times like these by the frequent publication of notes summarizing the implications, for the general practitioner, of current epidemiological events, and of recent advances in knowledge and technique. We propose, therefore, to include in our weekly Epidemiological Notes occasional short summaries of this kind, dealing with points that are likely to arise in general practice rather than in the institutional treatment, or the administrative control, of infective disease.

MEDICAL WAR RELIEF FUND

We publish this week at page 427 an announcement of the setting up of a Medical War Relief Fund to give temporary help to medical practitioners and their dependants who find themselves in financial straits as a direct result of war conditions. As the war goes on serious hardship will undoubtedly arise among individual members of our profession, and the committee making this appeal is confident that the object of the new Fund must commend itself to the generosity of medical practitioners at large, especially of those to whom the war has brought no considerable financial loss. The Royal Medical Benevolent Fund has agreed to co-operate fully in the administration of the Fund, the collection of money being entrusted to an *ad hoc* committee whose composition is stated in the appeal. There will thus be no overlap of effort or wasteful multiplication of machinery. Contributions of any amount will be welcomed, and should be sent to Dr. G. C. Anderson, who is acting as honorary treasurer of the Fund, at B.M.A. House. Cheques should be made payable to the Treasurer, Medical War Relief Fund.

SOME PROBLEMS OF TISSUE GRAFTING

Not only is there difference of opinion regarding the tissues which can be successfully transplanted from one person to another, but certain problems of transplantation from one part of the body to another have yet to be solved. Doubt still exists, for example, about the fate of bone transplanted from a patient's tibia to his humerus. Do the bone cells in the graft survive and participate in subsequent repair or is the graft merely a scaffolding to be invaded from the bony bed in which it is placed? The evidence suggests that the bulk of a large graft serves merely as a framework, but that small particles of transplanted bone can survive and produce actively proliferating osteoblasts. Commenting on this question, R. A. Willis[1] of Melbourne believes that, except in cases in which a graft is itself required to act mechanically as a splint or strut, crushed or fragmented spongy bone as recommended by Matti[2] is the most suitable form in which to transplant bone. Perhaps the commonest example of autotransplantation is skin grafting, and one of the most interesting problems in connexion with it is regeneration of sensation. This has been studied in the United States by H. R. McCarroll,[3] who, contrary to what has been generally believed and taught, has found that regeneration occurs over all parts of Thiersch and free full-thickness grafts simultaneously. In pedicled grafts, on the other hand, sensation returns first along the proximal border and the first part of the graft attached. Willis,[1] who has been studying tissue transplantation experimentally at the Baker Institute of the Alfred Hospital in Melbourne, has concentrated on homotransplantation rather than autotransplantation, and is not at all concerned with heterotransplantation, such as the grafting of monkeys' testes

[1] *Austral. N. Zeal. J. Surg.*, 1939, **9**, 119.
[2] *Arch. klin. Chir.*, 1931, **168**, 236.
[3] *Ann. Surg.*, 1938, **108**, 309.

DUNCAN C. L. FITZWILLIAMS: A PLEA FOR A MORE LOCAL OPERATION IN REALLY EARLY CARCINOMA OF BREAST

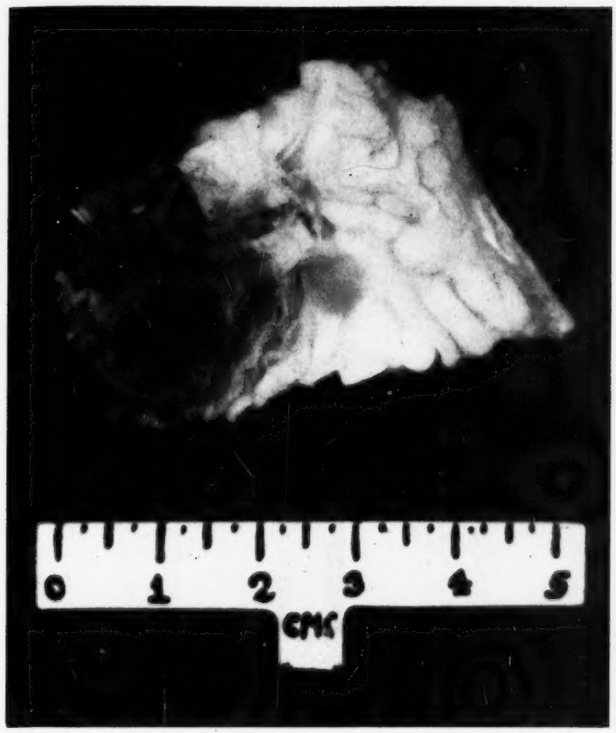


FIG. 1.—Diagnosis with no symptoms. Tiny carcinoma under right nipple well shown.

FIG. 2.—Photograph of patient taken thirteen years after operation.

VERNON PENNELL AND L. C. MARTIN: REMOVAL OF A TERATOMATOUS "TWIN"

FIG. 1.—A case of teratoma in a female child aged 5 weeks.

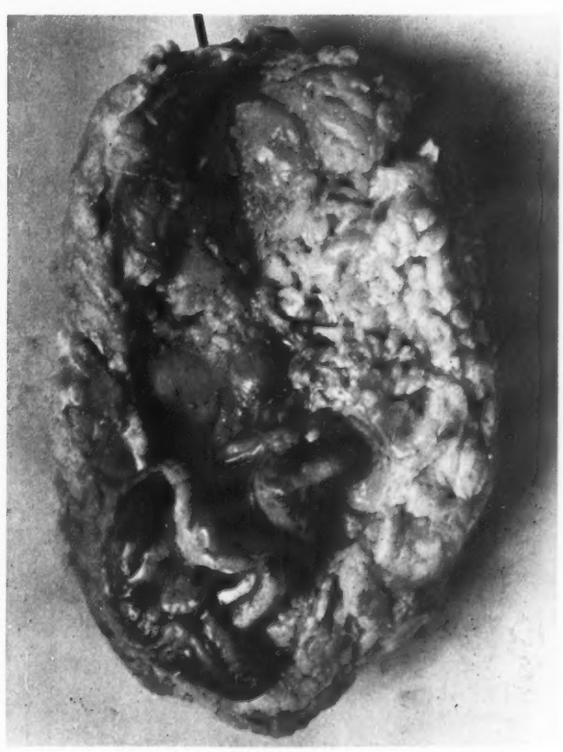


FIG. 2.—Contents of the teratoma. (See diagrammatic key in text.)

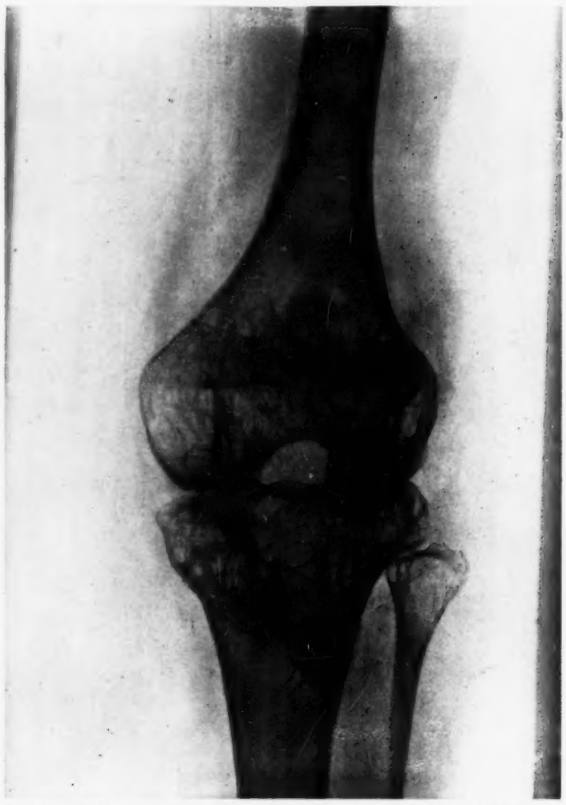


FIG. 1.—Male, aged 18. Fibrous ankylosis and quiescent disease of right knee after six years of conservative treatment. Multiple abscesses and eleven sinuses at one time. Extensive area of disease and gross septic infection precluded arthrodesis.

FIG. 2.—Lateral view of joint shown in Fig. 1.

FIG. 3.—Patient aged 34. Left knee-joint two years after arthrodesis. Previous conservative treatment had been followed by reactivation of disease.

FIG. 4.—Lateral view of joint shown in Fig. 3.

R. DRUMMOND: MARCH FRACTURE INVOLVING BOTH FEET

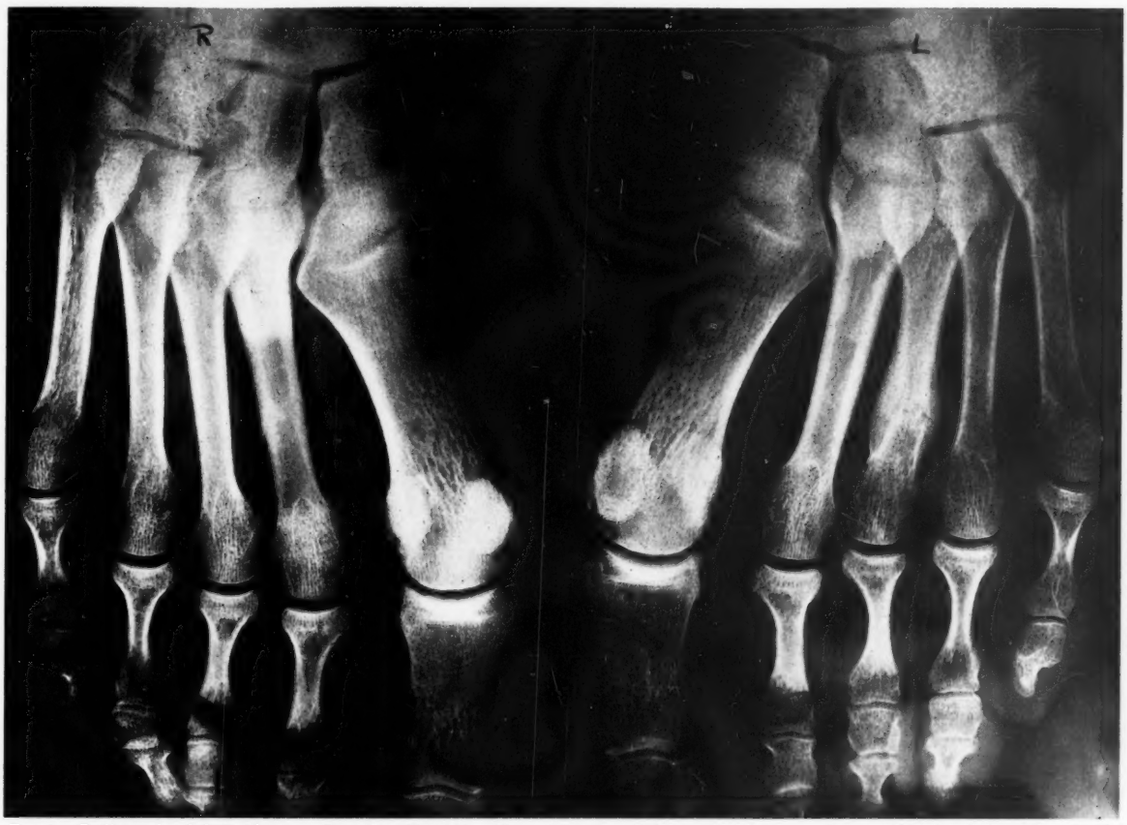


FIG. 1.—Radiograph of feet taken on December 23, 1938. There is an ununited "crack" fracture of the mid-shaft of the right second metatarsal bone without callus formation. Near the neck of the left third metatarsal bone is a uniting fracture surrounded by a partially ossified spindle-shaped mass of callus.

FIG. 2.—Radiograph taken on October 30, 1939. The line of fracture has disappeared on both sides, and complete bony union has been effected. There is well-marked residual thickening of cortex of left third metatarsal. A spindle-shaped mass of dense bone surrounds mid-shaft of right second metatarsal: it is this appearance which may be confused with new growth or periostitis.

M. G. KINI: BENIGN CYST OF PAROTID GLAND

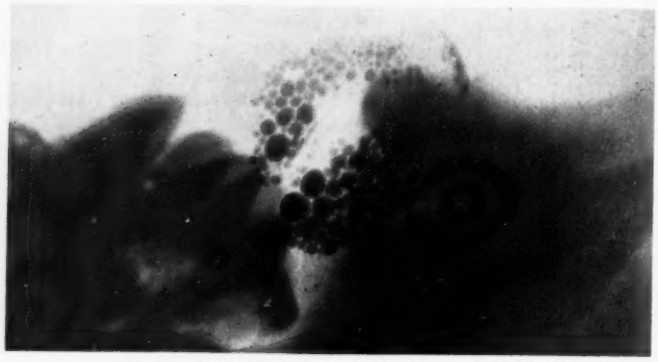
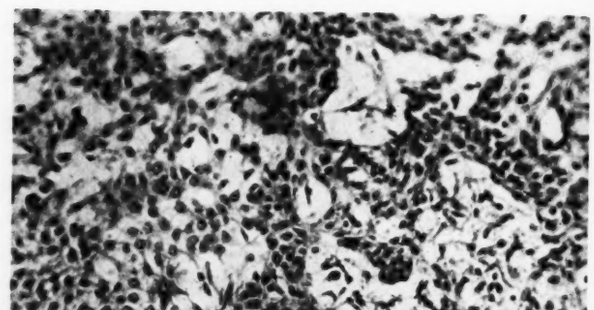


FIG. 1.—Radiograph showing the lipiodol in the cyst.

FIG. 2.—Photomicrograph of the cyst wall, showing the stratified epithelium.

J. D. N. NABARRO: GLOMUS TUMOUR



The tumour in section.

H. KENRICK CHRISTIE: NEUROFIBROMATOSIS, OR VON RECKLINGHAUSEN'S DISEASE

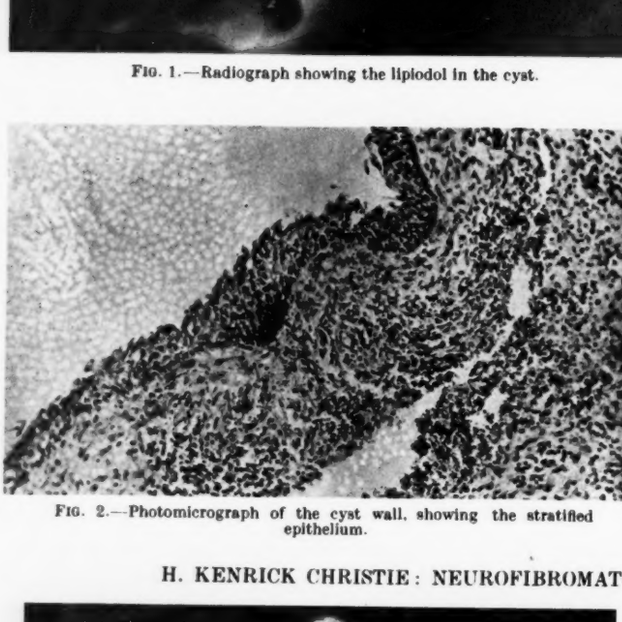


FIG. 1.

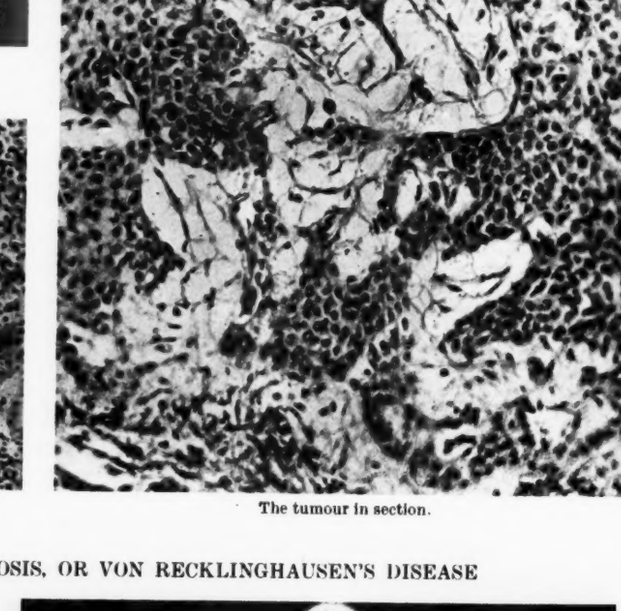


FIG. 2.

into man, as was carried out by Voronoff. With regard to testicular grafting, he states that there is no evidence, experimental or clinical, either that successful homografts possess any "rejuvenating" or anti-senescence value, or that heterografts are ever capable of permanent survival and hormone production. Apart from matters of technique—such as asepsis—the success or failure of homografted tissue depends on a number of factors: (1) the nature of the grafted tissue—for example, cartilage and ovary do better than skin or ductless glands; (2) the state of subdivision of the graft; (3) the age of the tissue grafted; (4) the site of implantation, well-vascularized stationary regions such as bone marrow providing the best implantation site; (5) the age of the host; (6) physiological need in the host—for example, thyroid is more likely to graft successfully where there is thyroid deficiency in the host; (7) consanguinity and genetic relationship, which appear to be favourable for successful grafting. Blood compatibility may also be of importance, while ill-defined individual peculiarities, possibly of an endocrine nature, apparently play a part. Willis's experimental work has been largely concerned with the grafting of embryonic tissues, and he suggests that embryo grafting may have its future surgical uses, pointing out that fresh sterile embryos or foetuses are often available and provide excellent material. His experimental results have clearly shown that embryo tissues can be much more successfully transplanted than adult tissues. The most helpful field would appear to be endocrine deficiency diseases, and here embryo transplants may find a valuable application. "The appropriate embryo glands," he stated, "would be carefully dissected out in a fresh sterile state and implanted whole or minced through a cannula into the subcutaneous tissue of the axilla, abdomen, or groin, or into the rectus sheath. . . . Suitable for study of the possible value of embryo endocrine grafts would be cases of proven myxoedema, cretinism, Addison's disease, parathyroid tetany, and pituitary dwarfism and infantilism."

CATHODE-RAY THERAPY

Since Brasch[1] described an impulse generator and electron tube for the production of high-speed electrons some seven years ago little has been added to the experimental work he then reported. A 2.5-million-volt generator was under construction in Berlin in 1935 for the dermatological clinic of the Charité, but its subsequent history and results have not been recorded. Schindler[2] now reports that a five-million-volt generator was expected to be completed in the United States this year, and he presents a summary of the properties of high-speed electrons and recapitulates Brasch's earlier experiments. The range of electrons depends upon their energy, so that, unlike wave-propagated rays, which develop their maximum effect on the skin, a beam of electrons has its zone of maximum absorption at some depth below the surface. Measurements showed that a 1,600 kV electron beam gave a maximum intensity in tissue at a depth of 1.3 mm., and the intensity at this depth was 2.7 times the surface intensity. Extrapolated figures suggest that a five-million-volt electron beam has its maximum intensity at 8 mm. depth, and this maximum will be some twenty-five times the surface intensity. It would be necessary to use some twenty million volts to produce an electron beam suitable for the treatment of internal cancer by techniques similar to those used in *x*-ray therapy, but electrons, being negatively charged particles, can be directed by a suitable arrangement of magnets along a hollow needle into the tumour substance. Their complete absorption within a few millimetres of tissue facilitates the destruction of the selected region without risk of damage to nearby normal tissues, and without those systemic disturbances and later indurative effects which not infrequently accompany *x*-ray therapy. Schindler quotes with approval Glocker's statement at the Zurich International Congress in 1936 that "as soon as the corresponding technical means are perfected . . . therapy with high-speed electrons will be the therapy of the future"; but this view leaves out of account the great difficulty of determining and effectively treating the microscopic limits of a neoplasm with an agent so localized in its action as a beam of electrons. At the present time there is probably more to be gained in cancer therapy by the exploitation of neutrons from the cyclotron than of electrons from an impulse generator, but the results obtained with the new American apparatus will nevertheless be awaited with interest.

[1] *Strahlentherapie*, 1933, **44**, 505.
[2] *Radiol.*, 1940, **34**, 222.

SPIROGRAPHY IN PULMONARY DISEASE

The essential features of pulmonary function may be described as: (1) air circulation or the movement of air between the atmosphere and the alveoli; (2) diffusion of respiratory gases between the alveoli and the pulmonary capillaries; and (3) circulation of the blood through the pulmonary vascular bed. It has been suggested[1] that the importance of the first of these—the ventilating factor—in the symptomatology of cardio-respiratory diseases is not sufficiently appreciated by clinicians. An individual is dyspnoeic whenever his capacity for breathing does not without effort correspond to the respiratory requirements of any given metabolic state. Interference with breathing capacity may occur as the result of partial obstruction of the tracheo-bronchial tree; reduced movement of the lungs from injury, paralysis, or disease of the framework of the chest; collapse of the lung; reduced distensibility of the lung from vascular congestion or fibrosis. On the other hand respiration may be affected by exertion, increased metabolism, anoxia of blood and the tissues, or alterations in nervous regulation of breathing from external or reflex causes. Inadequate aeration of blood by the lungs is ordinarily tested by measuring the oxygen saturation of the arterial blood. Uhlenbruck[2] showed, however, that it could also be detected by spirometric methods by measuring the oxygen deficit, which is the excess of oxygen absorbed by anoxaemic subjects during the first few minutes of breathing pure oxygen. Normal subjects at rest absorb the same amount of oxygen per minute from inhaled air whether this is atmospheric or pure oxygen. Cournand, Richards, and Darling[1] describe a simple and rapid method for measuring the form of quiet and deep breathing, lung volumes, breathing capacity—that is, the maximum possible pulmonary ventilation per unit of time—and the oxygen deficit. The apparatus is a modified recording spirometer of the closed-circuit type, derived from the Benedict-Roth apparatus in general use for the estimation of basal metabolism. Characteristic spirograms are obtained in obstructive emphysema, the most constant alteration being the retardation and prolongation of expiration, which become more marked as expiration proceeds. In mild cases this is seen only in deep breathing; in advanced cases it is seen in quiet breathing also. Other alterations are: (1) inability on successive deep (vital capacity) breaths to return to the same initial expiratory position, and a greater reserve air when starting from normal expiration than when starting from full inspiration; (2) decreased maximum (rapid) breathing capacity; and (3) improvement in each of the foregoing upon the administration of drugs of

[1] *Amer. Rev. Tuberc.*, 1939, **40**, 487.
[2] *Z. ges. exper. Med.*, 1930, **74**, 1.

the bronchodilator group. There is oxygen deficiency only in advanced cases with arterial anoxaemia. In pulmonary congestion due to heart failure the chief qualitative changes in the tracings are a decrease in vital capacity, often a greater decrease of reserve air, and some general slowing in the exchange of the final 100 or 200 c.cm. on deep inspiration and expiration. There is not the progressive retardation during expiration which is seen in emphysema. According to Christie and Meakins[2] distensibility of the lung decreases proportionally as congestion increases, but retractibility decreases to a much lesser extent—that is, the lung can be expanded only to a limited degree but returns on expiration to its former position. It is pointed out that this spirographic technique also provides information of value in such conditions as chest deformities, respiratory neuroses, and malingering. It certainly offers a convenient method of following the function of a patient's lung quantitatively over a period of years.

VITAMIN B_1 IN CHINESE NUTRITION

The war in China, with its refugee problem, has made possible some useful investigations on nutrition, which are described in the annual report of the Henry Lester Institute of Medical Research at Shanghai. One clinical study was made on 674 chronic and acute cases of beriberi treated with pure vitamin B_1 or preparations containing known amounts of the vitamin, such as yeast powder, peanut butter, orange-peel extract, and marmite supplied through the British Fund for Relief in China. Chronic cases before treatment showed a total absence of the vitamin in the urine; after treatment the excretion gradually mounted from zero to a constant level indicative of saturation of the body tissues. *X*-ray tracings of the heart showed that it is always enlarged in acute beriberi and there is always a rapid reduction in its size following treatment. In several cured cases of chronic beriberi severe exercise tended to decrease the excretion in urine; also, when the level of vitamin B_1 intake remained constant a sudden drop of room temperature tended to increase excretion. At the beginning of high fever in a well-nourished patient there was a greater excretion of vitamin B_1 than in normal individuals; on the other hand, patients admitted after the tenth day of fever usually presented a low excretion. The administration of acetyl salicylic acid and neo-arsphenamine in nutritional deficiency diseases increased the excretion of vitamin B_1. In most cases of acute beriberi one injection of 5 mg. of aneurin followed by the administration of 3 mg. a day by mouth was sufficient. Occasionally a few cases required 10 mg. by injection. In chronic cases administration by the oral route was found to be satisfactory, larger doses being given during the first few days so as to saturate the whole system with the vitamin, and the level was subsequently maintained by smaller doses. Preparations such as marmite and yeast powders were thought to be less effective than pure vitamin B_1 or aneurin, possibly owing to an incomplete absorption of the vitamin from yeast during its passage through the intestinal tract. It has been shown at the Henry Lester Institute that the average amount of zinc ingested each day in a balanced diet is about 12 mg., while the diets of the poorer classes in South China show a daily intake of about half that amount. Strong evidence has been forthcoming of a positive correlation between the zinc and aneurin content of foodstuffs. It was, therefore, reasonable to suppose that sufferers from beriberi would show a reduction in the zinc content of their tissues, and it has been found that in this disease the zinc content of the nails and skin is reduced to half its normal value.

[2] *J. clin. Invest.*, 1934, **13**, 323.

VITAMIN C IN FRUIT SKINS

It was shown some six years ago by Bacharach and others[1] that the vitamin C of oranges and lemons is less and less concentrated as one proceeds from the pigmented flavedo through the thick white albedo of the fruit to the pulp and the juice, and that the central pith and the pips contain none. Their results have been confirmed by several authors, including M. Olliver in a highly interesting paper[2] wherein she has published the results of an extensive study into the effects of canning and of home cooking on a whole range of fruits and vegetables. She finds that in other fruits also the ascorbic acid gradient rises from skin to core, as has already been shown for apples by Bracewell,[3] by Nudia[4] for a number of Indian fruits, and by Olliver herself in an earlier publication.[5] These conclusions have tended to consolidate themselves into a generalization expressing itself in the popular belief that anti-scorbutic activity is only skin deep. This is to ignore the high vitamin C content of black-currant juice, to say nothing of the citrous juices and of the tomato cocktail. Incidentally, it is perhaps opportune to protest against the unscientific habit of thought that relegates the tomato to the general limbo of vegetables, when it is not only morphologically and functionally but also antiscorbutically entitled to the full fruit status. As a lesson once more to "consider the plant," and to approximate to that phytocentricity of which we have written before, come Miss Olliver's findings about the potato. The wary have suspected all along that a generalization proved sound even for all fruits might not apply to an organ so different as the tuber. They have wondered if the nursery injunction to associate sin with the peeling of potatoes might not have some obscure symbolic significance, rather than any basis in nutritional science. This would now seem to have been sound scepticism. Miss Olliver's experiments show that the ascorbic acid content of the potato increases from without inwards. This admirable vegetable—not only an excellent source of assimilable carbohydrate, but also by no means to be neglected for its contribution of iron and aneurin—may have a rough exterior, but clearly conceals beneath it a heart of ascorbic acid.

SNAKE BITES

Although specific antivenene is the best treatment for a case of snake bite, there are obvious difficulties in the way of giving it early and on a wide scale. Immediate measures include the application of a ligature to delay the absorption of the venom, attempts to remove the poison by sucking and incising the bite, chemical destruction of the venom by, for example, potassium permanganate or gold chloride. Although intermittent application of a ligature is often stated to preserve life until antivenene is available, Allen,[6] as a result of experimental work with American rattlesnake and water-moccasin venoms, concludes that an occlusive tourniquet is wholly harmful and that it should not be employed. Amaral[7] is of the same opinion. The argument is that, whereas a tourniquet does not prevent the poison spreading by infiltration through the tissues, occlusion of the blood supply heightens the local destructive action of the venom and contributes to the development of gangrene. Further necrosis also results from the local use of potassium permanganate or gold chloride, which are now held to be useless in neutralizing the injected venom. Immediate amputation or wide excision of the bitten area may save life, but some time

[1] *Biochem. J.*, 1934, **28**, 1038.
[2] *Lancet*, 1940, **2**, 190.
[3] *Biochem. J.*, 1931, **25**, 138.
[4] Ibid., 1936, **30**, 701.
[5] *J. Soc. chem. Ind.*, 1936, **55**, 153 T.
[6] *Amer. J. trop. Med.*, 1939, **19**, 393.
[7] *Nelson loose-leaf Med.*, 1938, **2**, 683, New York.

ago Jackson[8] recommended a less formidable measure—removal of the poison by suction. A tourniquet is very lightly applied in order not to delay absorption but to increase congestion and fluid exudation. Under local anaesthesia a large crucial incision is then made at the site of the fang marks; surrounding this at a distance of about three inches a number of small incisions are then made. In these secondary incisions several hundred cubic centimetres of physiological saline are injected, and suction is applied over the original incision for from one-half to one hour by means of a rubber bulb and an inverted funnel or a Bier's hyperaemia cup. The suction is repeated for twenty minutes hourly during the next ten to fifteen hours, and in between treatments simple compresses of magnesium sulphate are applied to the incision and the limb is kept warm. The treatment is presumably best adapted for venoms which cause a powerful local irritation and abundant fluid exudation, and the scepticism of Amaral and writers in tropical countries concerning suction treatment for anything except the Crotalus type of venom may be justified. Binet, Waller, and Robillard[9] have shown that cobra venom may be detoxicated *in vitro by* sulphydril compounds, such as reduced glutathione or sodium thiolactate, at certain hydrogen-ion concentrations. Injections of suitable solutions of such compounds in place of the physiological saline might extend the benefits of the suction treatment. These compounds also detoxicate bee venom,[10] and it would be interesting to know whether they have a similar effect on the venom of scorpions, the stings of which may be quite dangerous to children, as shown in a recent report by Basu,[11] who recorded five deaths among thirteen children under 10 years of age who had been stung by scorpions.

AN ANTI-GREY-HAIR FACTOR

Several years before the recognition of the complex nature of vitamin B various workers had observed loss of pigmentation in the fur of rats fed on diets deficient in this factor. Others working on the nutritional anaemia of rats brought about by feeding them exclusively on whole milk found a similar de-pigmentation, which was cured when the anaemia was cured by giving copper salts. Morgan and others[12 13] and Lunde and Kringstad[14 15] agree that some substance essential for the natural pigmentation of hair is present in the fraction of liver and yeast extracts which remains after vitamins B_1 and B_6 and riboflavin have been removed by repeated treatments with fullers' earth. They also agree that this factor is distinct from the rat growth factor found in the filtrate fraction. Morgan and his co-workers made histological studies of the adrenals, thyroid, skin, and testes, and observed certain degenerative changes in those organs in rats which had received none of this factor, while in control rats which had received it no such changes were discovered. By dietary measures they also produced greying of the hair in one guinea-pig, eight young dogs, and two young silver foxes. The greying of the hair in rats took place first on the head between the ears and at a spot about the middle of the back. It took eight weeks to produce it, and a dose of extract equivalent to 10 grammes fresh liver daily for six weeks to cure it. The anti-grey-hair factor, which Lunde has designated B_{13}, is soluble in phenol and is not precipitated by phosphotungstic acid. In yeast it is completely destroyed by heating for three hours at 100° C. There is no further information concerning the chemistry of this factor.

[8] *Sth. med. J.*, Nashville, 1929, **22**, 605.
[9] *C. r. Soc. Biol.*, Paris, 1939, **131**, 954.
[10] See *British Medical Journal*, 1940, **1**, 623.
[11] *Amer. J. trop. Med.*, 1939, **19**, 385.
[12] *J. Nutrit.*, 1938, **15**, 27.
[13] Ibid., 1940, **19**, 233.
[14] *Z. physiol. Chem.*, 1939, **257**, 201
[15] *J. Nutrit.*, 1940, **19**, 321.

WORK OF THE QUEEN'S NURSES

The Queen's Institute of District Nursing reports on the maternity cases, numbering just upon 84,000, attended by Queen's nurses and village and other nurse-midwives during 1939 when no doctor had been engaged for the confinement. The number of maternal deaths was 138, a mortality of 1.69 per 1,000 live births, comparing with 2.16 in the previous year. The cause of death in thirty-two cases was sepsis, in forty-seven it was accidents of labour, and in twenty-three eclampsia. Fifty of the deaths were of primiparae and twenty-five were of women who had had five or more pregnancies. The death rate was 1.20 in the urban areas and 1.75 in the rural. Of the fatal cases forty-seven, or 34%, were not delivered by the midwife, as it was necessary to summon medical aid before birth. In twenty-one other fatal cases a doctor was called in after the birth on account of placental difficulty. Among the total of 84,000 cases medical aid was sent for on behalf of the mother 32,533 times, and on behalf of the infant 5,319 times. The report also shows that twenty-three abnormal cases—small measurements or with a history of ill-health or puerperal complications—were booked by midwives. It is explained that the attendance of midwives upon abnormal cases is due largely, if not entirely, to requests made by the doctors that the midwives should book these cases but send for medical aid as and when required. The women concerned are too poor to pay a doctor's fee as well as the midwife's, and this arrangement ensures them adequate care, though it has the effect of increasing the maternal death rate in midwives' practices, which are generally regarded as among normal cases. In addition the Queen's nurses attended 37,852 confinements in which a doctor had been engaged, the midwife acting as the maternity nurse. Among these cases the number of maternal deaths was 117, or 3 per 1,000, four of the deaths being due to miscarriage.

TEMPORARY REGISTRATION FOR CANADIAN AND U.S.A. DOCTORS

The Home Secretary, the Secretary for Scotland, and the Minister of Health, under powers given them by the Defence Regulations, 1939, have issued jointly a Statutory Order dated September 14, enabling the General Medical Council to register Canadian and United States doctors for the period of the emergency. The object of this measure, officially described as the Medical Register (Temporary Registration) Order, 1940, is to facilitate the employment of doctors from Canada and the United States in the Emergency Medical Service. Owing to difficulties that arose out of the medical autonomy of the Canadian Provinces there has hitherto been no more than partial medical reciprocity between this country and that Dominion, and we have never had reciprocity with the U.S.A. or any of its component States or territories and possessions. Under the new emergency Order the bars to the practice of medicine in this country by American and Canadian doctors are lifted, and the General Medical Council may in its discretion admit to the *Medical Register* for the time being any of our colleagues from the Dominion of Canada and from the United States who fulfil certain conditions relating to the nationality and character of the applicant and the adequacy of his diploma as furnishing a sufficient guarantee of professional knowledge and skill.

Professor Thomas Sinclair, M.P., F.R.C.S., who has represented Queen's University, Belfast, in the House of Commons since 1923, has announced his intention to resign the Parliamentary seat on grounds of health.

STERILIZATION OF SURGICAL GLOVES

BY

R. J. WILLAN, M.V.O., F.R.C.S.

Professor of Surgery, Durham University

The care of surgical india-rubber gloves in these days is an anxious problem; therefore any method that will help their conservation is an important matter.

Hitherto I have never willingly used gloves sterilized by the dry method, a reason being that they were so often in a perished condition and unusable after one sterilization. I have had a conviction that gloves sterilized by boiling in an open sterilizer for thirty minutes (termed the "wet" method) far outlasted gloves sterilized in an autoclave under pressure (termed the "dry" method). Gloves sterilizable up to ten times by the wet method would be in good condition compared with gloves perished in one sterilization by the "dry" method. Therefore I started the experiment prejudiced against the latter.

"Wet" Sterilization

Six pairs of gloves were boiled in an open sterilizer for thirty minutes upon six separate occasions. At the conclusion of the experiment each glove was pulled on to my hand: further, each glove was tested by pulling and stretching. Except for some increase in their size the gloves were all normal.

"Dry" Sterilization

This was done in an autoclave. Tests during each experiment showed a registered temperature of 240° F.—that is, sufficient heat to ensure sterilization. The gloves were placed singly in a calico container. Every glove was well tested after sterilization: it was inflated, pulled, and stretched in different directions. They were sterilized at different pressures and periods, the following being the various results obtained:

No. 1: 40 lb. Pressure for 15 Minutes; No. 2: 25 lb. Pressure for 10 Minutes.—The gloves were found in both tests to be thin and to have lost their nature: they easily tore when manipulated.

No. 3: 20 lb. Pressure for 20 Minutes.—Under this pressure the gloves were found to stand up a little better, although they still tore when pulled and stretched.

No. 4: 15 lb. Pressure for 20 Minutes.—Six pairs of gloves were sterilized at this pressure. When put through the same test of pulling and stretching they appeared to be fairly normal, although there was a very strong smell of sulphur, which proves that even at this pressure some change takes place in the glove.

No. 5: 10 lb. Pressure for 30 Minutes.—Six pairs of gloves were done at this pressure. There was no smell, and the gloves stood up to any amount of stretching and pulling.

The first two tests were only tried twice; the third test was tried on six occasions, while the fourth and fifth tests were repeated six times. This experiment proves that when the gloves are sterilized at 10 lb. pressure for thirty minutes they retain their natural condition.

Commentary

The tests conclusively show, therefore, that if india-rubber gloves are sterilized in an autoclave at 10 lb. pressure for thirty minutes there is no reason whatever why the surgeon should not use this method in preference to the boiling method in an open sterilizer. If a pressure higher than 10 lb. is employed, then the wastage of the gloves is a serious matter. I now know the reason why gloves perished so easily, and my conscience in using dry gloves is assuaged.

In a large hospital it would be economical if gloves to be "dry"-sterilized were done at a central source rather than in individual operating theatres. Without doubt, in the anxiety of a theatre nurse to get really effective sterilization, gloves may be subjected to pressures in the autoclave far in excess of 10 lb.; and then complaints are made that "a batch of gloves was rotten." An important detail in glove sterilization is the wrapping up of each glove separately: if a pair are placed in the same "container" they tend to perish. One of the most important points is the preparation and actual method of packing, which should be as follows:

The gloves should be carefully washed in luke-warm water, using a good soap, and then rinsed thoroughly and dried. Powder well inside, and also a certain amount on the outside, with talc to prevent the rubber from sticking together. To ensure free passage inside the gloves place a pack of lightly folded gauze in each of them. Wrap completely, without wrinkling, in gauze or a towel, and place in the top portion of the sterilizer, taking care to see that the gloves do not come in contact with either the metal sides of the sterilizer or the metal of the sterilizing drums, if they are placed in these.

Conclusions

Surgical india-rubber gloves can be efficiently sterilized in an autoclave at 10 lb. pressure for thirty minutes and retain their vitality. Pressures used higher than this cause the rubber to perish.

The tests show that gloves sterilized in this way by the "dry" method last as long as those sterilized by the "wet" method.

My thanks are due to Mr. D. Foggan, the superintendent pharmacist at the Royal Victoria Infirmary, Newcastle-upon-Tyne, for his valued collaboration and for his enthusiasm in carrying out the tests.

EFFECT OF WAR ON MIDWIFERY SERVICES

According to the latest report on the work of the Central Midwives Board the demand for practising midwives has increased as a result of the war because many medical men who have been conducting maternity work have been called up for war service. Reference is made in this report to the rapid building up of the system of improvised maternity homes in reception areas under the Government's evacuation scheme. During the early months of 1940 it was found necessary to close a number of these, although to others small parties of from ten to twenty cases continued to be sent. By the end of March almost all the midwives from the L.C.C. hospitals had returned to London, and some of the London voluntary hospitals which had moved their maternity units to the reception areas reopened them in the metropolis and resumed the training of pupil midwives on a restricted scale, while in addition a number of independent midwives returned to practise. The Board is now planning for the immediate re-staffing of the improvised maternity homes which are at present being run by skeleton staffs or are being kept on a care and maintenance basis.

The compulsory scheme for post-certificate courses of instruction which came into operation at the beginning of 1939 has been placed in abeyance, but the Board hopes that until such time as it can be reintroduced voluntary courses will be organized whenever and wherever possible. So far the war has not rendered necessary any permanent changes in the scheme for the training of pupil midwives, and it has been possible to hold the examinations at the usual three-monthly intervals. Arrangements have, however, been made for candidates to take the routine part of their examinations at their training schools instead of in certain specific centres, and additional centres for the oral and practical part have been formed.

A.R.P. Midwifery

Information was received that in certain parts of the country women in the A.R.P. service were being given a short and superficial training in midwifery, including a method of expressing the placenta. The Board felt bound to draw

attention to the dangers likely to arise from this, and suggested that if a woman had begun labour while in an air-raid shelter she should be regarded as a civilian casualty and conveyed to a hospital or first-aid post, or, if there was not time or opportunity, a doctor or midwife should be summoned. The Minister of Health replied that he and the Minister of Home Security were entirely in accord with this view, and that steps were being taken to bring to an end the instruction which had come under criticism.

The ruling of the Board that a second trained person in addition to the midwife in charge of the case must be present at the time of administration of analgesics has been questioned on the ground that it makes it practically impossible for women in rural districts to receive analgesia during childbirth. Certain suggestions for annulling or easing the condition were referred to the Royal College of Obstetricians and Gynaecologists, by whose recommendations the Board has been guided, but the College has been unable to accede to them. It has, however, appointed an *ad hoc* committee to investigate this matter.

On the question of calling in medical aid the Board states that the correct procedure for midwives is, at the time of booking, to agree with the patient as to the doctor to be called in, and in an area in which the authority has arranged a local panel to invite the patient to select a doctor from that panel. If the patient on booking wishes to have another doctor not on the panel, that doctor should be called in. The local supervising authorities have returned lists of 19,585 midwives who have notified their intention to practise, but many of these names appear on the list of more than one authority, and the actual total of practising midwives is 17,721.

PURCHASE TAX: PROPOSED LIST OF ESSENTIAL DRUGS

The Treasury gives notice that pursuant to the provisions of Section 19 (2) of the Finance (No. 2) Act, 1940, it is proposed to lay before the House of Commons a draft list more particularly defining "essential drugs of an exceptionally costly character" (Seventh Schedule, Class 19) which shall be exempted from Purchase Tax. The drugs are:

Arsphenamine and its derivatives.
Bromethol.
Chloroform (anaesthetic).
Cocaine and salts of cocaine.
Desoxycorticosterone acetate.
Ether (anaesthetic).
Ethyl chloride.
Hexobarbitone.
Insulin.
Liver extract and active principles of liver.
Oxygen.
Pituitary extract.
Procaine and salts of procaine.
Sulphaniiamide and its derivatives.
Suprarenal cortex extract.
Sera.
Vaccines.
Hormones, natural or synthetic, and preparations thereof, including liver extracts and active principles of liver, and insulin and its compounds with protamine and zinc.

Any representations which interested parties may desire to make in regard to this proposed list should be addressed in writing direct to the Commissioners of Customs and Excise, Custom House, Lower Thames Street, E.C.3, not later than October 1, 1940.

P. Hamel (*Thèse de Paris*, 1940, No. 73), who records nine cases in patients aged from 26 to 62, states that typical gout is easily diagnosed and is becoming rare, unlike the numerous atypical forms, which are much more frequent and difficult to recognize. Atypical forms in which the joints are involved are often misleading—such as the polyarticular forms simulating acute articular rheumatism, the pseudo-rheumatic form, the suppurative arthritic form, the pseudo-phlegmonous form. Other atypical forms are the recurrent phlebitic and pseudo-tuberculous, and tendinous gout.

MEDICAL WAR RELIEF FUND

It is very evident that as the war goes on cases of serious financial distress will arise among members of the medical profession. The profession as a whole has, however, suffered less severely than other professions from the disturbances of the war, and it would therefore seem right that it should itself come to the assistance of its less fortunate members.

The benevolent funds of the profession are hard put to it to provide for the ordinary cases of hardship, and it is clearly necessary to establish a special fund, as was done during the last war, for the temporary assistance of medical practitioners and their dependants who find themselves in financial straits as a direct result of war conditions. Doubtless in some cases this assistance will most appropriately take the form of a loan which will be repayable when the recipient has been able to re-establish himself.

To organize the collection of the Fund a committee has been formed consisting of the Officers of the British Medical Association, the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the President of the Royal College of Obstetricians and Gynaecologists, the Chairman of the Charities Committee of the British Medical Association, the President of the Royal Medical Benevolent Fund. Full co-operation in the administration of the Fund has been promised by the Royal Medical Benevolent Fund. In this way overlap of effort will be avoided and the best and most economical use will be made of the funds subscribed. It is proposed that any sums not expended in the relief of war distress should ultimately be distributed at the discretion of the Committee among the Medical Charities.

The Committee is confident that the object of the Fund will commend itself to the generosity of medical practitioners generally, and especially of those to whom the war has brought no considerable financial loss. A first list of subscriptions received appears below. Subscriptions of any amount will be welcomed. Cheques, payable to the Medical War Relief Fund, should be sent to Dr. G. C. Anderson, Honorary Treasurer of the Fund, British Medical Association House, Tavistock Square, London, W.C.1. Applications for assistance from the Fund should be sent to the Honorary Secretary at the same address.

The following subscriptions have been received:

Individual Subscriptions

£52 10s.—Dr. J. C. Matthews, Downton.

£26 5s.—Sir Thomas Barlow, London; Dr. J. W. Bone, Luton; Sir Maurice Cassidy, London; Dr. H. Guy Dain, Birmingham; Sir John Fraser, Edinburgh; Dr. Thomas Fraser, Aberdeen; Mr. N. Bishop Harman, London; Lord Horder, London; Sir Robert Hutchison, London; Mr. Hugh Lett, London; Sir Ewen Maclean, Cardiff; Dr. W. Paterson, Harlesden; Dr. H. Robinson, London; Prof. Wm. Fletcher Shaw, Manchester; Mr. H. S. Souttar, London; Sir Beckwith Whitehouse, Birmingham.

£21.—Viscount Dawson, London; Mr. E. Lewis Lilley, Leicester; Sir Cuthbert Wallace, London.

£15 15s.—Prof. C. F. Illingworth, Glasgow; Dr. R. Thin, Edinburgh.

£10 10s.—Dr. Janet K. Aitken, London; Dr. F. M. B. Allen, Belfast; Dr. G. C. Anderson, London; Sir Girling Ball, London; Prof. Seymour Barling, Birmingham; Dr. C. L. Batteson, London; Mr. Victor Bonney, London; Mr. L. R. Braithwaite, Leeds; Sir John Broadbent, Wendover; Mr. L. R. Broster, London; Dr. J. A. Brown, Birmingham; Prof. A. H. Burgess, Cheadle; Sir Farquhar Buzzard, Oxford; Dr. J. I. Cameron, Glasgow; Mr. V. Zachary Cope, London; Dr. R. W. Craig, Edinburgh; Dr. W. Allen Daley, London; Prof. Stanley Davidson, Edinburgh; Mr. Gordon Gordon-Taylor, London; Dr. F. Gray, London; Dr. E. A. Gregg, London; Prof. E. W. Hey Groves, Bristol; Dr. L. L. Hadley, Birmingham; Mr. A. J. C. Hamilton, Inverness; Mr. R. M. Handfield-Jones, London; Mr. W. Sampson Handley, London; Mrs. K. Bishop Harman, London; Col. W. L. Harnett, London; Gen. R. Heard, Edinburgh; Dr. N. G. Horner, London; Mr. Cecil A. Joll, London; Sir Robert Kelly, Liverpool; Dr. J. F. Lambie, Glasgow; Sir Kaye Le Fleming, Wimborne; Dr. G. W. Miller, Dundee; Sir George Newman, Harrow Weald; Mr. L. E. C. Norbury, London; Mr. W. H. Ogilvie, London; Prof. H. Platt, Manchester; Dr. H. W. Pooler, Ashover; Sir Humphry Rolleston, Haslemere; Col. H. Letheby Tidy, London; Mr. Cecil P. G. Wakeley, London; Sir James Walton, London; Dr. S. Wand, Birmingham; Sir Alfred Webb-Johnson, London; Prof. R. J. Willan, Newcastle-on-Tyne; Dr. J. A. Williams, Birmingham; Sir Charles Wilson, London.

£10.—Dr. Colin D. Lindsay, Plymouth; Dr. E. M. Dimock, Broxbourne; Dr. N. E. Waterfield, Little Bookham.

£5 5s.—Dr. P. Martin Brodie, Edinburgh; Dr. A. Beauchamp, Birmingham; Prof. E. Bramwell, Edinburgh; Dr. A. Goodall, Edinburgh; Col. R. G. Gordon, Bath; Dr. F. E. Gould, Birmingham; Dr. F. W. Grant, Jarrow; Prof. R. W. Johnstone, Edinburgh; Dr. J. G. McCutcheon, Glasgow; Dr. Peter Macdonald, York; Dr. A. S. M. Macgregor, Glasgow; Dr. W. F. McLean, Haddington; Prof. C. M'Neil, Edinburgh; Dr. J. B. Miller, Bishopbriggs; Sir D'Arcy Power, London; Col. A. H. Proctor, London; Dr. W. T. Ritchie, Edinburgh; Dr. F. A. Roper, Exeter; Dr. M. G. Sheldon, Birmingham; Mr. R. Scott Stevenson, London; Sir Frederic Still, London; Dr. W. E. Thomas, Ystrad Rhondda; Dr. W. N. West-Watson, Bradford; Dr. G. A. Wilkes, Birmingham; Dr. John Young, Edinburgh; Dr. R. F. Young, Glasgow; Anonymous.

£5.—Dr. Elizabeth Bolton, London; Mr. W. McAdam Eccles, London; Col. C. Max Page, London; Wing-Comdr. T. S. Rippon, London; Prof. G. Grey Turner, London; Lt.-Col. A. Hedley Whyte, Newcastle-on-Tyne; "Panel of 1273."

£3 3s.—Dame Janet Campbell, London; Dr. H. A. Clegg, London; Dr. C. Hill, London; Dr. W. Lyle, Belfast; Dame Louise McIlroy, London; Dr. A. Macrae, London; Dr. L. S. Potter, London.

£2 12s. 6d.—Sir Henry Brackenbury, Hendon.

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£72.—Hon. Staff, Radcliffe Infirmary, Oxford.

Local Medical and Panel Committees

£300—Birmingham; £250—Derbyshire; £150—Hertfordshire; £100—Gloucestershire, Leicestershire; £50—Bedfordshire, Dorset, East Riding of Yorkshire; £26 5s.—Gateshead; £25—Caernarvonshire, Rotherham; £20—Greenock; £10 10s.—Aberdeenshire; £10—Darlington; £5 5s.—East Lothian.

Total £2,697 1s. 6d.

Nova et Vetera

MEDICINE IN RETROSPECT

The March of Medicine. Edited by the Committee on Lectures to the Laity of the New York Academy of Medicine. (Pp. 168. $2.00, or 13s. 6d. net.) New York: Columbia University Press; London: Oxford University Press. 1940.

This is the fourth number of the New York Academy of Medicine Lectures to the Laity. The series consists of essays correct in detail, well written, and pleasant to read. The objects of the lectures are to tell the general public how medicine has achieved its present position and to dispel some of the mystery which still shrouds its practice in too many even of the educated people. The example thus set by the New York Academy of Medicine might well be followed in this country. The present volume contains an article from the pen of Dr. Alvarez of the Mayo Clinic to show why quackery still flourishes, and another by Dr. Sanford Larkey on the development of sanitary measures in towns. He calls it "Health in Elizabethan England," and it is supplemented by Dr. Drinker's information gained from the diaries kept by Elizabeth Drinker, a stout-hearted old Quakeress living in Philadelphia during the second half of the eighteenth century. Dr. Heyd tells of the romance of modern surgery, and Dr. Hoskins the melancholy and still incomplete story of insanity. Dr. Karl Menninger ends the book with a witty article on psychiatry under the heading "The Cinderella of Medicine." There is an excellent index.

Elisabeth Regamey (*Schweiz. med. Wschr.*, 1940, **70**, 697) records the case of a woman aged 28 who was vaccinated in the thigh, and developed a generalized vaccinial reaction thirty-seven days later. The eruption was particularly profuse on the thigh and in the mouth. The rest of the body showed petechiae and ecchymoses. Simultaneously with the generalized vaccinia there developed a haemorrhagic syndrome characterized by epistaxis, haematemesis, intestinal haemorrhages, metrorrhagia, and thrombopenia. Recovery took place, but some time later she had a fresh attack with an almost complete absence of thrombocytes. Splenectomy was performed, but death took place from shock. There was no necropsy.

Correspondence

The Meaning of "Débridement"

SIR,—"Débridement" threatens to rival the word Mesopotamia in blessedness. The way this term is bandied about may in these days have serious repercussions.

It seems to be thought that débridement and wound excision are synonymous, to judge from the writings of many who, one would have thought, should have kept us right in these matters. This is of course far from being the case. "Débridement," by derivation, by original use in French literature, and I submit in its proper application in the English language, means a freeing from restrictions, a releasing of restraints. When we relieve tension by wide incisions, particularly through deep fascia, when we facilitate drainage, we are practising débridement. There is a very real field for this "operation" for wounds which have been neglected for many hours or days. To use the word as an equivalent for "excision" means that we have no conception of the purpose or technique of wound excision, which aims, of course, at removal by the knife of all contaminated wound surfaces, as the only completely successful means at our disposal of averting wound infection.—I am, etc.,

Liverpool, Sept. 21. JOHN T. MORRISON.

Local Anaesthesia in General Surgery

SIR,—I have read with great interest the article by Mr. Harold Dodd (September 14, p. 345), but there is one statement which I find it a little difficult to understand. "The nearer the brain the operation is the smaller the amount of local anaesthetic which can be injected with safety, as it is quickly absorbed into the general circulation and exerts its toxicity." Surely in order to reach the vital centres the drug which is being injected must be absorbed into the local capillaries and pass thence via the veins into the general circulation. It is therefore the rate of absorption in different areas and not the relative proximity to the brain which determines the maximum dose that can be injected with safety. The region of the thyroid being one of the most vascular in the body, it is only to be expected that the rate of absorption should be greater there than in the leg.—I am, etc.,

Carlisle, Sept. 18. H. C. MACLAREN.

SIR,—Mr. H. Dodd in his interesting article (September 14, p. 345) refers to the differences in pulse-rate and pulse-pressure readings during similar operations performed under local and general anaesthesia. I have been particularly interested in this question applied to thoracic surgery, and over a period of several years have collected data on some 500 cases which might be worth recording. Two groups of operations are comparable. They are:

1. Thoracoplasties performed under (*a*) general anaesthesia—formerly pure nitrous oxide and oxygen; latterly chiefly pentothal sodium induction followed by cyclopropane; (*b*) local analgesia—a combination of infiltration and intercostal block using a half-and-half mixture of 1 in 2,000 pantocain and 0.25% novocain to which is added adrenaline in the proportion of 1 in 500,000.

2. Major thoracotomies (chiefly pneumonectomies and lobectomies) performed under (*a*) general anaesthesia—usually endotracheal cyclopropane or nitrous oxide, oxygen, and chloroform, with tracheal suction where necessary; or (*b*) spinal analgesia—unilateral high block with 1 in 1,500 percaine.

A comparison of the anaesthetic charts shows that in the first group an overwhelming proportion of the "local" cases showed a high pulse rate and low pulse pressure compared to the "general" series. It was quite common to see patients in no obvious mental or physical distress with pulse rates of 160 and over, while it was exceptional to see unconscious patients with rates exceeding 120. The difference persisted until the day after operation. It was also noticeable that if a light general anaesthesia was superimposed during the operation the pulse rate invariably fell and the pulse pressure rose,

In the second group the difference was not so obvious, but the majority of "spinal" cases showed lower pulse rates and pulse pressures than the "general" ones. Too close a comparison cannot be drawn in this group, as most of the spinal blocks were given for bronchiectasis and most general anaesthesias for malignant new growth.

As regards convalescence there was very little to choose between the methods, as evidenced by the fact that some thoracic surgeons favour one and some the other. My impression is that patients recovering from thoracoplasty suffer more post-operative pain if they have had local analgesia. About 65% of patients preferred general anaesthesia, and of these about 80% favoured an intravenous induction in preference to an inhalation one.

It is impossible to avoid psychic shock altogether by preliminary sedation, and if premedication is pushed to the stage of basal narcosis an uncooperative patient results upon whom a pure local analgesia will prove difficult or impossible. I believe, therefore, that a light degree of general anaesthesia is desirable in major surgery, although the necessary muscular relaxation and protection from traumatic impulses can often be obtained more advantageously by infiltration and block methods than by the addition of toxic drugs such as ether and chloroform. The anoci-association idea propounded by Crile over twenty years ago has proved to be sound, and although combined techniques may be tedious and require a high degree of skill from the anaesthetist the results justify their employment.—I am, etc.,

St. Albans, Herts, Sept. 22. C. LANGTON HEWER.

Nurse Anaesthetists

SIR,—I have been instructed by the staff of Addenbrooke's Hospital to forward you a copy of a letter which has been sent to the Association of Anaesthetists regarding nurse anaesthetists.—I am, etc.,

F. B. PARSONS.

The President, Association of Anaesthetists of Great Britain and Ireland.

SIR,—The Honorary Medical and Surgical Staff of Addenbrooke's Hospital, Cambridge, feel that the grave misgiving felt by your Committee may perhaps be mitigated if the following facts are brought to your notice.

With the outbreak of war five of the eight honorary anaesthetists to this hospital were mobilized and left the district. They were in general practice in the town, and their work has largely been carried on by other practitioners, including the three remaining honorary anaesthetists. In addition to this reduction in the anaesthetic staff the beds at Addenbrooke's Hospital and its annexe have already been increased by more than 140, and a further 150 are in contemplation.

In the past qualified resident anaesthetists have been forthcoming, but they have been liable to be called up by the Services, and gaps between appointments have been inevitable. Although we have had for the most part very efficient officers for this appointment, yet there have been occasions when difficulty has been encountered in filling the office, and inevitably some inexperienced anaesthetists have been encountered.

At the present moment the training of students in the administration of anaesthetics at the London hospitals cannot be ideal, and cases are known of qualified men who have been unable to give more than one or two anaesthetics under supervision before qualification. Furthermore, the Central Medical War Committee, in its circular D.77 of July, 1940, has asked all hospitals as far as possible to give house appointments to the newly qualified in preference to the more experienced applicants. The Honorary Medical and Surgical Staff therefore felt that the training of its own anaesthetists for long-term appointments (two to three years) was worthy of consideration. Some of this staff have considerable experience of these sister-anaesthetists in the U.S.A. and on the Continent of Europe, and members of the staff of a large hospital in East Anglia gave their opinion of the value of this personnel, which it was stated had been functioning there for many years with entire success.

In order to safeguard as far as possible the interests of surgeon and patient it has been decided that each sister-anaesthetist shall receive six months' training—that is, double that required for a registrable qualification as a medical man—and they will, of course, give (under supervision during this period) several hundred more anaesthetics than the number administered by a newly qualified practitioner. Only nurses who have held the post of sister in ward or operating theatre have been chosen, and it is anticipated that at least two qualified medical men will be present in the theatre during the administration of the anaesthetic by a sister-anaesthetist.

With regard to your sentence "These duties cannot properly be assigned to an unqualified person: that they had been so assigned, should accident befall, say, a patient serving in His Majesty's Forces, would create public resentment which would bear heavily against the hospital concerned" the staff feel that whether the patient be a civilian or a member of His Majesty's Forces is beside the point. What they are concerned with is the provision of an efficient and adequate anaesthetic personnel, both honorary and resident, ready to deal at a moment's notice with future casualties—civil or military—for which hospitals have been told to hold themselves in readiness.

At the risk of reiteration, the staff wish to make it quite clear that there is no intention of supplanting the honorary anaesthetists. Rather they hope to reinforce and to assist those who, in spite of considerable overwork in their own and their absent colleagues' practices, contrive loyally to give more than their usual time to the services of the hospital.

I have been directed to send a copy of this letter to the Editors of the *Lancet* and the *British Medical Journal*.

Yours faithfully,

F. B. PARSONS,
Honorary Secretary,
Medical and Surgical Staff,
Addenbrooke's Hospital, Cambridge.

Sept. 14.

SIR,—Doubtless Dr. John Elam writes from experience I and many others do not possess. Yet I have seen enough of anaesthesia in the hands of general practitioners to agree that there is a lot to commend the experiment of allowing nurses to act as anaesthetists. In my experience they are at least willing to be taught and do recognize that this highly specialized branch of medicine requires much skill and practice. However, the fact that many medical men do not even recognize the importance (and rarity) of good anaesthetists would not seem to indicate that these "gentry" should be overlooked altogether. On the contrary, it is to be hoped that Oxford and Cambridge in their own ways will do more in future to train students as well as nurses to cope successfully with at least the simpler methods of anaesthesia. I think both Cambridge and the nursing profession have every right to resent Dr. Elam's inference that the appointment of nurse anaesthetists at Addenbrooke's shows "how little importance is attached to the art and science of anaesthesia in the university town of Cambridge."—I am, etc.,

Eye, Suffolk, Sept. 17. J. SHACKLETON BAILEY.

SIR,—May I join the many who will voice their appreciative endorsement of Dr. John Elam's letter (September 14, p. 368) concerning the efforts of practitioners who administer anaesthetics to insinuate themselves into the ranks of specialists. What is wanted is the closer co-operation of the anaesthetist with the surgeon and the consequent simplification of anaesthesia.

It should be more widely realized that the surgeon is an excellent judge of anaesthesia and can give a specialist's assessment of the optimum amount of anaesthetic for the operation to be conducted with ease and safety. Anyone who has pursued the prescribed practical course of anaesthetics as laid down in a medical curriculum should be able to give safe and satisfactory anaesthetics, provided he or she is agreeable to accepting a word of advice now and again from the surgeon. The ideal anaesthetic is not only safe but sufficient, and, generally speaking, the surgeon is as good a judge from his end of the table of the way these two factors are bearing on one another as is the specialist anaesthetist from his end.

The present tendency of the anaesthetic specialist is to regard the operation as a mere incident in the anaesthesia. I have been to London recently and seen the species at work, surrounded by his McKesson with its many modifications needing a porter to push it about, sometimes supported by an assistant anaesthetist, always by an anaesthetic nurse, and

often by yet another to take constant blood-pressure readings. It is difficult to realize that quite a nice anaesthetic can be given for a similar case by an obscure general practitioner with a bottle of chloroform and a lint mask. I know that many surgeons standing patiently waiting in the background, faced with a long list of operations, heartily wish themselves back in the days of "rag and bottle," as the master anaesthetist takes command of the field, issuing sharp orders to all about him, and struggles with the distal lighting of his endolaryngoscope preparatory to intubating the next abdominal case. Indeed, I have heard one surgeon say to the anaesthetist under such circumstances: "All right, Dr. X., if you don't mind I'll start now and you can pass your little tube afterwards."

I say good luck to the nurse anaesthetists at Addenbrooke's. In Nature everything tends to simplification in its progress, and so at long last it appears that anaesthesia will again become a science for man as well as superman.—I am, etc.,

St. Ives, Cornwall, Sept. 16. E. C. ATKINSON.

SIR,—The letter which you published from Dr. John Elam contains a cheap, envious sneer at the Oxford Department of Anaesthetics. Recently I had the pleasure of spending a week in that department, with the object of studying modern methods of anaesthesia. I learned that students are trained to form an opinion as to the best type of anaesthetic to be used in each particular case by visiting the patients in the wards before operation. Premeditation and indications for this are discussed. Students are also expected to see their patients after operation and to discover if any post-operative symptoms may be attributed to the anaesthetic used or to the method of administration. From the moment of my arrival and throughout my stay I received the greatest courtesy from every member of the staff of the department whom I met.

I learned the views held regarding the different anaesthetics and the methods of administration, the technique of spinal anaesthesia and indications, field blocks, regional, use of laryngoscope, intubation, "saturation," and so on. Even during the short lunch intervals I was entertained by hearing discussions on subjects varying from the action of calcium gluconate in ether convulsions to the mechanism of reducing-valves.

I was somewhat surprised to learn that the professor himself was "doing dentals" one morning. I made my way to the dental department and left it with thoughts akin to those I had after comparing Cotton's golf with my own. Any medical committee who can employ nurse anaesthetists whose knowledge and skill would satisfy the Oxford Department of Anaesthetics is to be congratulated.—I am, etc.,

Salisbury, Sept. 19. A. D. H. SIMPSON.

SIR,—Dr. John Elam's extraordinary letter endeavours to discredit the growing body of expert anaesthetists. This will bring against him a storm of indignation from every surgeon in the country, including, undoubtedly, those of Addenbrooke's Hospital, who advertised for a nurse to be trained to give anaesthetics.

While nurses can be taught to give anaesthetics for minor surgical work, they will not displace anaesthetists for major surgical operations. The many surgical advances in recent years, particularly those in the newer fields of surgery—for example, chest and plastic surgery—owe a tremendous debt to the skill and knowledge of the anaesthetist. It is only by critical research such as has been made possible by a wonderfully generous man that anaesthetics may be made still safer and more pleasant for the patient and that post-operative complications may be reduced.

It is obvious that Dr. Elam has never performed a major operation, otherwise he would be able to appreciate that feeling of security that only a good anaesthetist can give. One can perhaps best explain this feeling by comparing it to that given by a good full-back in Rugby football who does not often score a try but often saves a match.—I am, etc.,

Loughborough, Sept. 17. ALAN F. GOODE, F.R.C.S.

SIR,—Since the publication of my letter about nurse anaesthetists I have received several communication from practitioners working in the counties or county towns. All tell the same tale: they have held resident appointments as anaesthetists and are anxious to practise as anaesthetists in their own districts, but the surgeons will not provide the opportunity. They are, in fact, "kept in their place," and the surgeons see to it that surgery and not anaesthesia is going to be the only specialty in their district.

Reading an American journal on anaesthesia recently I came on this phrase: "We have nothing to learn from Europe." This is surely a great reproach, but it is largely true, and it must be admitted that except in Oxford under Macintosh there is no systematic attempt being made in this country to advance our knowledge on anaesthetic problems. Anaesthesia is a specialty and a very important specialty, but because we will not recognize this truth in our daily lives a large number of valuable human lives are wantonly thrown away and an infinity of unnecessary suffering caused. The fact that a hospital in an ancient university town sees fit to appoint nurse anaesthetists when there are any number of enthusiastic men in the two counties served by this hospital anxious and most willing to serve as anaesthetists shows that I do not exaggerate.—I am, etc.,

New Barnet, Sept. 22. JOHN ELAM.

Helping the Homeless

SIR,—Your leading article on fear, distrust, and hate (September 7, p. 323) should have stimulated many of us to observe our own—and others'—reactions during the last fortnight. It seems to me that a strengthening of the emotional conviction that we *are* all soldiers fighting in a great battle is the best defence against overt or secret fear, and that each of us should make such tiny contribution as he may to this cause. We are all psychologists enough to realize that, while reason does not control emotion, rational or pseudo-rational arguments do give pleasure or confidence if adapted to a particular emotional state. As Trotter pointed out, Germans are—or are believed to be by their rulers—at a more infantile level of emotion than we are. Hence German reliance on the lie absolute. We are children of a somewhat older age, and cannot take pleasure in pure fantasy but require some elements of rationalization.

I may illustrate this upon what used to be my vocation. According to the Prime Minister's statement, about 1,600 civilians were killed in the first fortnight of the battle over London. Assuming the battle to rage with equal intensity for a whole year, instead of some 46,000 deaths in the County of London there would be about 88,000. This would be about 10,000 fewer than would have occurred had the normal London rate of mortality of 1861–70 still applied. Obviously, so long as we think of ourselves as civilians no emotional comfort whatever can be drawn from being told that we are no worse off than our grandparents. But the thought of a fighting army suffering fewer casualties than the Victorians, whose self-satisfaction was reproved by Matthew Arnold, has a different emotional appeal.

To pass from this triviality (not, perhaps, quite a triviality; propaganda is important) to more practical matters, my obsolescent medical experience and the presence of my name upon the *Medical Register* allow me to help in the humbler duties of our profession, such as visiting camps and refuges for the homeless. It seems to me that a great want is kindly *authority*. One will find, perhaps, a large number of tired, worried people in a school building which, if properly used, is large enough to accommodate in some comfort all there. There are plenty of willing helpers; it is not too difficult to sort out the sick and aged, even to move them to institutions; much more difficult to find leaders. In such a place a cheery N.C.O. who will detail working parties to the lavatories, space out the occupancy of rooms, infuse something of the comradeship of the Army, would be a treasure. Would it be *too* revolutionary to seek military assistance of this kind? My point is that some *mild* discipline and the presence of a man in uniform with the sense of authority which uniform gives would make these refuges and centres far more efficient. Of course the experienced members of the Metropolitan Police would be as good, or better. But it seems statistically reasonable to suppose that the supply of N.C.O.s available in the environs of London would be greater if only there were effective liaison between the various "authorities," central and local, involved.

In our profession we do not disdain trifles. I am not at all ashamed to say that a puppy in my home who barks not in fear but joy when an explosion is particularly loud is to me a source of moral strength. In a blacked-out school, harbouring tired people who have passed through a dreadful experience, some cheery fellow giving orders, perhaps cracking jokes, will mean much more. I am not much moved by the argument that these places are only temporary refuges, just waiting-rooms as it were. There will be a continuous flow of sojourners, and to make their hard life easier is worth while.—I am, etc.,

Loughton, Sept. 20. MAJOR GREENWOOD.

An Obstetric Emergency Service

SIR,—I was pleased to see that you considered the description by Dr. W. J. C. Morris of the obstetric emergency service which he introduced into this county of sufficient interest to refer to it in a leading article (September 14, p. 360). In the absence of Dr. Morris on Army service perhaps I may be permitted to give you a few additional data regarding the arrangements made by the county council in connexion with maternity work.

There is a maternity hospital of thirty-two beds. This hospital, which is in a converted mansion house, will be replaced by a hospital of seventy-three beds which is at present under construction and which in addition will contain nine post-natal beds. There is also a maternity home of twenty-four beds in which doctors attend their own patients if they so desire. This home deals with over 600 confinements a year.

In the beginning of 1937 Dr. Morris took up duty as full-time obstetrician in charge of the hospital and available for consultation by medical practitioners for their patients either in their own homes or in the maternity home. A scheme under the Maternity Services (Scotland) Act, 1937, came into operation in 1939 during the month of March. This scheme provides for every woman applying for its benefits the services of a doctor and a midwife; it makes provision for three pre-natal examinations, for attendance at the confinement, including any hospital treatment found to be necessary, and for a post-natal examination.

The annual number of births in the county is between 3,800 and 4,000. The average maternal mortality from 1930 to 1936 was 6.8, the highest rate being 9.8 in 1930 and the lowest 5 in 1935. In 1937 and 1938 the rate each year was 4.7. In 1939 the rate fell to 2.8. Although no claim can be made at this stage as to the cause of the fall, the facts are as stated.—I am, etc.,

C. A. BIGNOLD,

Ayr, Sept. 16. County Medical Officer of Health.

X-ray Examination of Service Men

SIR,—Referring to Dr. G. Jessel's observations (September 7, p. 336) permit me to correct perhaps a wrong impression. "Mass miniature radiography" is not likely to exclude the clinical examination, but on the contrary become a valuable adjunct. In the past mass *x*-ray examination has been prohibitive owing to the high cost of full-sized films, drying, and storage space. Miniature mass radiography carried out at a low cost will now extend the *x*-ray examination to all in the Services, and I have no doubt in course of time to the majority of industrial workers. It should be remembered, however, that miniature radiography is only a substitute for the full-sized contact film, and it should be noted that for all cases of very early lung pathology a full-sized film is desirable. At present mass miniature radiography is confined to chest work, and even should the introduction of this new method of radiography tend to explore in advance the work of the clinician, there are still all the other systems of the body requiring clinical investigation. It must be remembered, however, that this image recorded on the miniature radiography film is, after all, only a photograph of a screen-shadow image, and, in the making, some of the finer detail (that might be recorded upon a full-sized film) is lost. Still further detail may be sacrificed when this small negative is again projected through a lantern upon a screen for final viewing. Therefore there is no doubt that some of the very early lesions of lung would be missed if investigation by miniature radiography was adopted as the only form of examination. Is it not a fact, however, that even with full-sized contact films some of these early cases do go undetected?

As to the clinical examination of such cases, quite a fair percentage are also missed; as Dr. Jessel rightly points out, "they have neither symptoms nor physical signs." It is, however, in these early cases that detection is more likely to be made in a higher percentage by *x*-ray examination than by clinical methods. In fact it has been my experience that *x*-ray examination has detected many cases of even gross pathology that had escaped clinical examination.

It need hardly be observed that to-day only a few of our examiners on boards are experts in chest work; hence the help of radiology to the less experienced in this field. It would therefore appear that none of our methods is infallible—clinical or *x*-ray—and that the small proportion of cases of very early infection will continue to go undetected until, as Dr. Jessel says, "the resistance is broken down" and something becomes evident to clinical or *x*-ray examination. There is no doubt that combined clinical and *x*-ray examination is the ideal, and with the introduction of miniature radiography this is now an established possibility.

It is agreed that chest radiographs are often difficult to interpret, and hence the necessity for real experts in this branch of work. We have only a limited number of real experts in chest radiology in this country, and their services could be mobilized for that purpose to constitute boards for examination of the *x*-ray films.

Concerning the statement about medical boards being rarely deceived by misstatements—that may be so, but there would certainly be many more cases of wrong disposal if there was not an *x*-ray film available of some of the cases. There is also the story of the tuberculous patient who during the last war used to stand near the gates of a certain hospital selling small samples of his sputum at 1s. a time to others about to be medically examined for military duties. History does not relate whether or not it was radiology that interrupted his business or a vigilant hospital secretary—probably both and the clinician. In conclusion, I feel we must all pull together—the clinician and the radiologist.—I am, etc.,

London, W.1, Sept. 14. NORMAN P. HENDERSON.

Muscular Rheumatism

SIR,—The paper on muscular rheumatism treated by local injection by Mr. Martin Button (August 10, p. 183) calls for a few comments. This method of treatment has been in use for several years now but is not sufficiently well known, for it is simple, rapid, and astonishingly successful. During the past winter, working in a busy military hospital, I had the opportunity of treating over 100 men in the Army with fibrositis in various parts of the body sufficiently localized to warrant treatment by injections. A vast amount of pain and time off was saved, as well as many hours of work by the physiotherapy department. Patients were cured in minutes instead of days, weeks, or even months. I hope to publish details at a later date.

Adrenaline is never necessary and is contraindicated, thereby avoiding the after-effects mentioned. Novocain (or procaine) 1% is a sufficient strength. With ordinary precautions sepsis never occurs, but a mild transitory malaise with headache is commonly experienced that evening. There are no dangers provided local anatomical features are kept in mind, and the usual precaution of withdrawing the plunger slightly before pressing it down will prevent injection into a blood vessel.

The site for injection should invariably be through the localized area of maximal tenderness, wherever this may be. A skin bleb is first raised with the finest possible hypodermic needle to minimize pain, and the larger injecting needle—for example, No. 12—is then pushed gently through this and inserted until the actual painful spot is found. The patient has no difficulty in recognizing this, and frequently points out that he is experiencing the radiation of pain previously noticed. About 2 c.cm. of 1% novocain should be injected. Pain is relieved dramatically and almost instantaneously. The patient must be told to work off his stiffness during the next two hours, take two aspirins on going to bed, and return next day if not cured.

The commonest cases are (so-called) lumbago, sciatica, brachial neuritis (or deltoid rheumatism), and pleurodynia; and they are very common. Fibrositis may occur, however, in almost any site, and a paper has recently been published on the by no means uncommon muscle lesions simulating visceral disease.[1] Clinical experience leads one to an appreciation of the experimental work of Lewis and Kellgren.[2,3]

If rapid and lasting cure is not obtained either the diagnosis is at fault, the technique is at fault, or the patient is at fault—that is to say, there is a focus of infection to be dealt with or a predominant psychological factor is present.—I am, etc.,

RICHARD TURNER, M.D., M.R.C.P., Major, R.A.M.C.
31st General Hospital, Northern Ireland.

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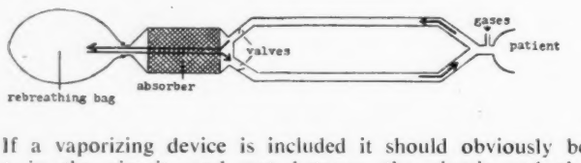
[2] Kellgren, J. H. (1939). *Clin. Sci.*, **4**, 35.
[3] Lewis, T., and Kellgren, J. H. (1939). Ibid., **4**, 47.

Carbon Dioxide Absorption Technique

SIR,—Many anaesthetists prefer the "to-and-fro" system of carbon dioxide absorption advocated by Waters to the "circular" method on account of its greater absorbing efficiency. An obvious disadvantage is the necessity for the absorber to be close to the patient's face to avoid "dead space." This snag can be removed and the basic principle retained by altering the usual layout of the circular system employing valves. The circuit in this system always seems to be arranged so that the respirations pass in only one direction through the absorber. If the apparatus is assembled as shown in the diagram there is no increase of "dead space," and "to-and-fro" absorption is obtained with the canister remote from the patient. Also, there is the added advantage of somewhat cooler respired gases.



If a vaporizing device is included it should obviously be put in the circuit, and not between the circuit and the absorber, in order to avoid "dead space." A disadvantage, of course, is the slightly increased obstruction to respiration inherent in the circuit system. There do not appear to be any other obvious snags, but I should be interested to know whether there are any practical objections to the use of this arrangement.—I am, etc.,

Calcutta, June 30. G. R. RAWLINGS, M.B.

Foreign Bodies in the Mouth during Air Raids

SIR,—The public has been warned of the risk of lung injury by "blast," and the use of rubber blocks, wooden wedges, and the like between the teeth has been advised. The danger of a foreign body in the mouth during moments of excitement and exposure to physical danger has not been sufficiently emphasized.

A child was admitted to a casualty clearing hospital after an air raid, unconscious, with a fractured base of the skull. She was bleeding from the nose and mouth and was very cyanosed. A resident officer had the presence of mind to clear out clots from the pharynx. He also removed a piece of soft rubber one inch square by half an inch thick which was found wedged between the base of the tongue and the posterior pharyngeal wall—obviously the main cause of the respiratory embarrassment. The child's companions were *in extremis* and unable to warn first-aid workers of the possible presence of a foreign body in the airway of the unconscious girl.

I do not wish to take part in any discussion upon the success of a bite block used in this way, or the reasons for such use. Those who advise people to use them should, however, insist that the block be of such a shape or size that it cannot be swallowed or inhaled, or that it be attached to the clothing by a cord of suitable length.—I am, etc.,

Sunderland, Sept. 20. R. E. JOWETT.

Shock in Air-raid Casualty—A Problem

SIR,—A therapeutic problem has been presented by a patient who sustained extensive soft-tissue injury due to prolonged compression of limbs under fallen masonry. After being pinned down for ten hours the patient reached hospital in an apparently satisfactory condition with a blood pressure of 140 mm. Hg and no evidence of fracture, wounds, or haemorrhage. Three hours after admission a dramatic fall in blood pressure took place, with the development of severe shock. This was accompanied by progressive transudation of plasma constituents into the injured tissues with pronounced haemoconcentration. This was treated by plasma transfusion, with restoration of a good circulation. The problem arose, however, in the subsequent clinical course.

1. Fluid continued to be lost into the injured areas, necessitating continued administration of large amounts of plasma.

2. The continued transudation of oedema fluid into the injured limb led to progressive swelling, which became more and more extensive and so tense that the circulation throughout the periphery of the limb was seriously embarrassed. This was treated by multiple incisions into the oedematous area, which resulted in temporary restoration of the peripheral circulation.

3. A further stage of circulatory collapse, however, developed on the third day. This was not due to diminution of the circulating blood volume, as there was no further haemoconcentration. A temporary improvement resulted from the administration of a high concentration of oxygen by means of the B.L.B. mask, but the patient died shortly afterwards.

It is with a view to stimulating discussion that we present this problem in your correspondence columns. We should be grateful to hear of similar air-raid casualties from other surgical units and of their experience in attempting to treat them. Amputation of a limb which presents neither wounds nor fractures seems a rather drastic procedure, and yet it is possible that it might have saved life in this case.—We are, etc.,

J. MCMICHAEL.
D. M. DOUGLAS.

Hammersmith Hospital, Ducane Road, London, W.12, Sept. 24.

Air-raid Shelters—A Criticism

SIR,—One has the feeling that as a profession we ought to be taking a more prominent part in the criticisms of present air-raid shelter for the population. To my mind the first provision must be lying accommodation. The increasing number one sees of cases of shelter oedema from the long hours of sitting with bent knees is only one evidence of the inadequacy of present shelter arrangements. Then there is the question of street shelters. As now admitted, these were never intended for sleeping in, and if for no other reason than smell and foul air they are not so fitted, even if bunks were built in. What does not seem to be generally realized is that surface shelters are the most efficient sound boxes, and it is noise, not fear, which keeps people awake. Having experienced both sorts of shelter, above ground and below, I have no doubt as to which is the better. Whether actually safer or not, it is a fact that the feeling of being below ground and the comparative absence of noise lead to a feeling of security and ability to sleep and relax even in the most unlikely positions and situations.

One hesitates to contemplate the situation in winter if whole families are compelled to spend fourteen or fifteen hours either in surface or even Anderson shelters. Where there is illness the situation becomes impossible. Deep shelters should be insisted upon, and the whole weight of medical opinion should be directed upon the Ministry of Home Security with this purpose in view.—I am, etc.,

London, N.6, Sept. 23. W. LEES TEMPLETON.

Inoculation against Typhoid Fever

SIR,—Should the civil population be inoculated against typhoid fever? This has been an obvious question for months, but I have seen no reference to it in medical publications.—I am, etc.,

Northwood, Middlesex, Sept. 23. O. HILTON, M.D.

Obituary

J. J. M. SHAW, M.D., F.R.C.S.ED.

Assistant Surgeon, Edinburgh Royal Infirmary

The death of Colonel J. J. M. Shaw, *M.C.*, R.A.M.C., with the Army in the Middle East will come as a shock to a widespread circle of friends—a circle not confined to his beloved Edinburgh, where he had made a name for himself as a surgeon and expert in radium therapy.

G. H. S. writes: I first knew Shaw as a student; he was, however, some years senior to me and we were not intimate friends at that time. He was an outstanding man at the university, not only on account of his ability as a student but also as president of the University Union, a leading member of the Officers Training Corps, and an organizer of various other student activities. In 1912 I joined the staff of the L.C.C. asylum at Bexley, when Shaw was a medical officer, and there we began a series of associations which continued until well after the last war. When mobilized in 1914 with No. 2 C.C.S. I found to my joy that Shaw was with the same unit, and we remained closely associated through many vicissitudes until he was appointed surgical specialist to No. 44 C.C.S. In Bailleul, where our unit was stationed for a long period, it is no exaggeration to say that Shaw was idolized, not only by the members of his unit and his patients but also by the French people. One of my happiest memories is that of acting as his assistant in producing a concert for the children of the town. Both of us were on intimate terms with the local doctor, a grand old man named Bels, and we used to operate on the civilian sick and wounded in the convent hospital, not hesitating at times to conduct a confinement. It was also in Bailleul that we collaborated with the late Colin Mackenzie of Bradford in writing one of the early articles on gunshot wounds of the abdomen published in the *Lancet* in 1916. After leaving No. 2 C.C.S. he frequently came back to us and went to other units with his surgical team. He was always a welcome guest, and his calmness and courage under shell fire or during the frequent bombing raids were an example which not all of us could emulate.

After the war we met again at Bangour War Hospital, where we were under Sir Harold Stiles. Thereafter our ways diverged: he went to London for a time and I to Sussex. After a short interval we both returned to Scotland, he to Edinburgh and I to Glasgow. In Edinburgh, as is well known, he became specially interested in, and wrote several articles on, plastic surgery and cancer research and organization.

Shaw loathed war, and one of his ideas after the last war was to form an association of war surgeons of all nations to aid in the fight for peace. He thought that such an organization might have a tremendous influence for peace, and that it could speak with an authoritative voice on the hideousness and uselessness of war. I remember well his remarking to me on one occasion some years ago that to see our sons in the uniform of the Officers Training Corps made his heart ache; and yet when the call came again, although he had many reasons for staying at home, he answered, and we are now mourning his loss on active service. Those of us who knew him and who shared in the wonderful fellowship of the clearing stations of 1914–18 will keep his memory ever green.

C. G. SELIGMAN, M.D., F.R.C.P., F.R.S.

Emeritus Professor of Ethnology, University of London

We regret to announce the death on September 19 at the Acland Home, Oxford, of Dr. Charles Gabriel Seligman, the distinguished anthropologist who was professor of ethnology in the University of London until his retirement from that chair in 1934.

From St. Paul's School Charles Seligman went to St. Thomas's Hospital with an entrance scholarship in science. He qualified in 1896 and was appointed house-physician. After winning the gold medal in pathology at the final M.D.Lond. examination in 1906 he was for a time director of the clinical laboratory at St. Thomas's, and held a Salter research fellowship in pharmacology. At the Royal College of Surgeons he was Hunterian lecturer in 1906 and Arris and Gale lecturer in 1913; he was elected a Fellow of the Royal College of Physicians in 1911 and F.R.S. in 1919. He was commissioned by the Government of India to undertake research work on the ethnology of the Veddas and in later years made important studies of native life in the Sudan and other parts of Africa, also in New Guinea, Borneo, and Ceylon. He was appointed lecturer in ethnology at the University of London in 1910, and three years later was elected to the University chair of ethnology at the London School of Economics, which he held as a part-time post for over twenty years.

Prof. Seligman was president of the Royal Anthropological Institute in 1923–5, Huxley memorial lecturer and medallist in 1932, and Frazer lecturer in 1933. He was the author of many important books and papers on ethnological subjects, some of them written jointly with his wife, formerly Miss Brenda Z. Salaman, who accompanied him on his later expeditions. He was a Corresponding Member of the Polynesian Society and of several foreign anthropological institutes, and had been a member of the British Medical Association for forty-three years. He contributed to the *Proceedings* of the Royal Society, vol. 73, a paper entitled "Observations upon the Acquirement of Secondary Sexual Characters indicating the Formation of an Internal Secretion by the Testicle." Six years ago a group of scientific friends published a volume of essays in his honour, mainly on anthropological topics.

LOUIS LAVINE, M.B., M.R.C.P.

A medical colleague sends the following tribute to Dr. Lavine, whose death was recorded in the *Journal* of September 14 (p. 369):

The loss which the profession in East Yorkshire has sustained in the sudden death of Dr. Louis Lavine is one which will not only be irreparable from a professional point of view but will be deeply felt by many friends over a wide area. A very gifted man with an extremely likeable personality, he was genuinely interested in the welfare of his patients, to whom he showed a marked degree of sympathetic consideration. Louis Lavine was deservedly popular, and his opinion was much sought after by his professional brethren. Personally he had a peculiar charm which endeared him to the hearts of many, and at social gatherings his hearty laugh, fund of humour, and love of fun were a delight to those present. He was a great lover of music, and especially of the violin, and possessed a few specimens of that instrument of rare value. A man who loved his home and his children, he did everything to make that home a great pleasure to his friends, for indeed it was a beautiful home, replete with many beautiful specimens of antiques collected from all parts. His hospitality will long be remembered by his friends, who spent many delightful evenings as his guests.

He was honorary physician at the Hull Royal Infirmary, and at a few smaller hospitals in the district. His great interest in cardiology, in the knowledge of which he laboured to make himself most proficient, made his opinion of great value in any heart condition. A past president of the local Branch of the B.M.A., and for some years previously secretary of the Division and on two or three occasions a representative at the A.R.M., he took a great interest in local medico-political affairs. He was a member of the East Yorkshire Medical War Committee at the time of his death. Of late years his health had been very indifferent, but nevertheless his death at the early age of 44 came as a stunning blow to many outside as well as to his colleagues.

Dr. Lavine had travelled widely, very often for health reasons, and his knowledge of the world and things was immense. Many of the films he took, especially those of a leper colony, will be long remembered by those who were fortunate enough to see them. To his sorrowing wife and young children goes out the sympathy of the whole profession and a wide circle of lay friends.

Dr. WILLIAM BOASE BENNETT of Aigburth, who died recently in hospital, at the age of 70, was for many years a good general practitioner in the South-end of Liverpool. He was educated in that city and qualified M.R.C.S., L.R.C.P. in 1896. After serving as house-surgeon at the Liverpool Royal Infirmary he went over-seas with the South African Field Force during the Boer war. On returning to Liverpool he settled down in practice and joined the British Medical Association, in whose local affairs he played no small part, particularly in the days of the great battle over the inception of the National Health Insurance Service. Indeed, so keen were his critical powers that his services were sought on many medical committees thereafter, until suffering and ill-health drove him into retirement. His colleagues and former patients recall him as a most upright and unselfish professional man.

We regret to announce the death in London on September 16 of Dr. EDWIN CECIL HARDWICKE, who practised for many years at Woolpit, near Bury St. Edmunds, Suffolk, and was held in the highest regard by a large circle of patients and colleagues. He received his medical education at Cambridge, where he graduated B.A. in 1902, and at St. Mary's Hospital, taking the M.R.C.S. and L.R.C.P. diplomas in 1911 and the Cambridge M.B., B.Ch. degrees in 1913. After qualification Dr. Hardwicke was house-surgeon in turn at St. Peter's Hospital, Covent Garden, and at the Kensington and Fulham General Hospital. Throughout the greater part of the last war he served with a temporary commission in the R.A.M.C. and was for a time on duty at Queen Alexandra's Military Hospital, Millbank. While in general practice at Woolpit he held the posts of medical officer and public vaccinator for the Nos. 2 and 3 Districts of Stow. He joined the British Medical Association twenty-seven years ago and was chairman of the West Suffolk Division in 1928-9.

Widespread sympathy will be felt with Sir Bernard Spilsbury on the death of his second son, PETER BERNARD SPILSBURY, who was killed during the recent bombing of St. Thomas's Hospital. Dr. Spilsbury, who was aged 25, graduated B.M., B.Ch. only a month ago, after studying medicine at Oxford and St. Thomas's. During the past few weeks he had been almost continuously on duty at the hospital, and was awaiting a commission in the R.A.M.C. for the duration of the war.

We regret to announce the death at the age of 61 of Dr. HANS ZINSSER, professor of bacteriology at Harvard University since 1923 and well known for his work on epidemiology, serology, immunology, and particularly typhus, for which, in conjunction with M. Ruiz Castaneda, he made a prophylactic vaccine. His principal publications are *Infection and Resistance to Infectious Diseases* (sixth edition, 1927), *Rats, Lice, and History* (1935), and *Textbook of Bacteriology* (eighth edition, 1939).

The following well-known foreign medical men have died: Dr. SIGARD ADOLPHUS KNOPF, formerly professor of phthisiotherapy at the New York Post-Graduate Medical School, aged 82; Dr. MARTIN WILLIAM PEEK, a founder of the Boston Psychoanalytic Society and editor of the *Psychoanalytic Quarterly*, aged 59; Dr. JOHANNES DE DUSSER DE BARENNE, a leading Dutch physiologist and co-editor of the *Journal of Neurophysiology*; Dr. DAVID GOURFEIN, formerly professor of ophthalmology at Geneva; Prof. MAX CLEOTTA, formerly director of the Pharmacological Institute of Zurich University, aged 72; Dr. GIUSEPPE TUSINI, formerly professor of surgery at Geneva; and Prof. FRITZ HÄRTEL, director of the University Surgical Clinic at Osaka, Japan, from 1922 to 1930, aged 64.

H. J. Normand (*Thèse de Paris*, 1940, No. 157), who records thirteen illustrative cases in patients aged from 19 to 50, states that ocular complications in spirochaetal jaundice are so frequent as to form almost part of the clinical picture. In spite of the predilection of the spirochaete for the optic nerve, iridocyclitis is a frequent complication and may occur at any stage of the disease. It is most frequent, however, during its decline and is often found in convalescence. All stages of the reaction may be found ranging from a simple injection of the ciliary body and hyperaemia of the iris to hypopyon. An important feature of the cyclitis is its chronic and non-inflammatory nature, resembling tuberculous cyclitis. It is generally, however, very mild and always ends in recovery. The treatment is symptomatic for the most part, and arsenical preparations are mainly required.

Medical Notes in Parliament

On September 18 and 19 the House of Commons debated in secret session the recent air bombardment of the country and the problems which have arisen in London and elsewhere. Sir John Anderson, Mr. Malcolm MacDonald, and Sir John Reith replied to the debate.

Variations in Nutritional Standards in Tyneside

Mr. DAVID ADAMS asked on September 19 about the discrepancies in the assessment of malnutrition among school children in different Tyneside areas revealed in a recent investigation by Dr. D. M. Goodfellow of Newcastle. Mr. RAMSBOTHAM answered that there were considerable differences in the percentages of under-nourished children found by school medical officers in the various Tyneside areas, though the differences shown by the returns for 1939 were not so great as in the returns for earlier years on which Dr. Goodfellow's criticisms were based. Such variations were to some extent real, and due to differences in the social circumstances of the areas, though in part due to differences in the standards adopted by the school medical officers. Where the returns appeared to indicate that the medical officer's standard differed materially from that usually adopted it was the practice of the Board to arrange for a visit to the area by one of their medical officers to discuss the matter and, if necessary, conduct a sample nutrition survey in a group of schools.

Psychotherapy at a Liverpool Hospital

Sir ERNEST GRAHAM-LITTLE in a question stated that during and after the last war advances resulting in now well-established therapeutic procedures were made in the psychological treatment of war neuroses; but that at the Royal Southern Hospital, Liverpool, working under the Emergency Medical Service, two medical officers because of the obstruction they encountered in applying these methods had resigned as a protest against the attitude of both the director of the unit concerned and the consultant adviser in neurology of the Ministry. He asked for a full inquiry, and said that otherwise these methods would encounter a setback, psychiatrists would be discouraged from undertaking these posts, and the recovery of patients suffering from these neuroses would be prejudiced. Mr. MACDONALD replied that he knew of the advances made during and after the last war in the treatment of the war neuroses, but was informed that the best method to be adopted in individual cases was still uncertain. He was also informed that there had been differences of opinion between the two medical officers referred to and the director, but his consultant advisers said the methods applied by the director were such as to secure proper facilities for treatment of the Service and civilian patients coming within the emergency scheme. Mr. MacDonald added that he would not be justified in intervening as suggested.

Universities and Colleges

UNIVERSITY OF LONDON

The Faculty of Medical Science has been transferred from the University of Glasgow to the Medical School, University of Birmingham, where the Michaelmas term will open on October 9.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—C. L. Davidson (with distinction).

FINAL M.B., CH.B.—*Part II*: J. Dawson (second-class honours), J. A. Aylwin, N. K. Barber, Katharine M. Barran, Elizabeth Bate, J. H. G. Brodribb, G. H. Cooper, D. M. Davies, N. S. Daw, Beatrice M. Downie, J. Firth, K. I. Heap, A. G. Hick, G. B. Hirst, T. R. MacLeod, J. S. Mather, R. Morley, R. G. Paley, D. L. Shaw, L. M. Sherwood, A. A. Smith, G. Snowden, T. W. Sutherland, R. Varley, M. G. Wilson.

The William Hey Medal has been awarded to R. B. Zachary, and the West Riding Panel Practitioners' Prize to L. Watson.

The Services

HONORARY SURGEON TO THE VICEROY

Colonel T. C. Boyd, I.M.S., has been appointed Honorary Surgeon to the Viceroy and Governor-General of India, vice Colonel D. H. Rai, I.M.S., retired.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

In an Admiralty casualty list, published on September 18, Probationary Temporary Surgeon Lieut. EDWARD IAN SMITH, R.N.V.R., and Temporary Surgeon Lieut. HAMISH ALEXANDER WALLACE, R.N.V.R., are reported as "Missing, Presumed Killed."

Dr. Smith was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1934, and immediately joined the British Medical Association. His home was at Milngavie, Glasgow.

Dr. Wallace was educated at Gonville and Caius College, Cambridge, and University College Hospital, qualified M.R.C.S., L.R.C.P. in 1934, and took the Cambridge M.B. in 1937, having gained first-class honours in the Natural Sciences Tripos of 1931. He was house-surgeon at the Royal West Sussex Hospital, Chichester, before settling in London, where he became medical correspondent of the *Daily Mail*.

EPIDEMIOLOGICAL NOTES

Enteric Fever—Hints for G.P.s

Those of our readers who have kept a watchful eye on these notes will have observed that the notifications of enteric fever have, for some weeks past, been far higher than during the corresponding period of last year. In the present emergency it is particularly important that serious outbreaks of this disease should be prevented, or rapidly brought under control, and in November last the Ministry of Health issued a memorandum on typhoid fever which should be consulted by those who desire fuller information on the epidemiological aspects of this disease than can be given in a short note. It may, however, be of some assistance to the practitioner to indicate briefly the steps that should be taken if any suspicious cases occur among his patients.

The main point, which cannot be too strongly stressed, is that every effort should be made to diagnose any case of enteric infection within the first few days, at a time when the clinical symptoms can give rise to little more than suspicion. With the laboratory methods now available it is possible to isolate the causative organism from the blood, or from the faeces, from the earliest onset of symptoms; and both methods of examination should be applied without delay. At the present time, when the disease is of frequent occurrence, it is a sound rule that *cultures of blood and faeces should be examined from any patient who has suffered for three days or more from a fever which is not certainly due to some other cause*. At a later stage it is often possible to obtain confirmatory evidence from an agglutination test, but this method is never so reliable as culture, and cannot give a definite diagnosis during the crucial first few days. Any case remaining undiagnosed until the end of the first week or beginning of the second has during that time been a potential source of infection to other persons.

It may be noted that the present high prevalence of enteric fever is almost entirely of the paratyphoid B variety. It seems to be characteristic of this infection that clinically atypical or ambulant cases are far more numerous than in true typhoid. These ambulant cases, even when suffering no inconvenience themselves, are highly infectious for others. They are, in fact, more dangerous than clinically typical cases, because they pursue their ordinary activities and may have ample opportunities for the contamination of food. A practitioner should, therefore, pay particular attention to any of his patients who may have been in contact with a case of paratyphoid fever, and if careful inquiry elicits any symptom that might be due to such an infection a specimen of faeces should be examined. If any contact of a case is known to be concerned in the handling of food, in the home or still more in any shop or restaurant, a specimen of faeces should be examined as a precautionary measure, even if no history of illness can be obtained.

Any medical officer of health will usually arrange to have such specimens examined free of charge. In many areas emergency public health laboratories have been established as a war measure by the Medical Research Council acting on behalf of the Ministry of Health. We understand that the pathologists in charge of these laboratories are prepared, where possible, to assist practitioners by collecting the necessary samples without fee, as well as by examining them in the laboratory.

Epidemiological Table

Owing presumably to postal delay, the Registrar-General's weekly return for September 7 has not been received at the time of going to press. The epidemiological table could not therefore be completed. It will appear next week.

Medical News

The Chairman (Lord Luke) and the London Hospitals Street Collections Central Committee have called a meeting to be held at the Leicester Square Theatre, W.C., on Tuesday, October 1, at 11.30 a.m., in connexion with Hospitals Day. The speakers will include Mr. Malcolm MacDonald, Minister of Health, and General Film Distributors, Ltd., have promised to give a short film display.

The in-patient department of St. John's Hospital for Diseases of the Skin has been closed down, but the out-patient department at 5, Lisle Street, Leicester Square, is still functioning, and clinics are being held daily from Monday to Friday from 1 to 3 p.m. The evening clinics are closed until further notice.

The London Cremation Co. Ltd. makes the following announcement: *Golders Green Crematorium.*—Till further notice all arrangements and forms direct to Crematorium, Hoop Lane, N.W.11 (Speedwell 2375-6). *Woking Crematorium.*—Till further notice all arrangements and forms direct to Crematorium, Hermitage Road, Knaphill, Woking, Surrey (Brookwood 2197).

General practitioners are asked to note that arrangements have been made with St. Bartholomew's Hospital for the reception of "emergencies" who would ordinarily have been sent to the City of London Maternity Hospital.

The annual meeting of the British Orthopaedic Association which was to be held in Liverpool on October 25 and 26 is cancelled, but it is hoped to hold the meeting at a later date.

The King and Queen visited the London Hospital early this week on the occasion of the two hundredth anniversary of its foundation. Their Majesties talked to many injured victims of recent air raids, and walked through the four wards set aside for air-raid casualties. The King sent a message of congratulation to the chairman of the hospital on its two hundredth birthday, and expressed his admiration of the way in which the medical staff and nursing services are carrying on in these difficult days in spite of the bombing to which they have been so ruthlessly subjected. The Prime Minister also sent a telegram to the chairman expressing his hope that the hospital will escape future cruel assaults from the enemy.

At its meeting on September 24 the London County Council received a report on the work of the civil defence services during the past few weeks. Tribute was paid to the soundness of the organization and the spirit of its members. The heaviest demands had been made on the London fire service. The ambulance service, including the auxiliary units, had had to transport many air-raid casualties to hospital, and in spite of the black-out the average time taken to reach a casualty was no more than seven minutes from the receipt of the call. Experience had shown the need for expanding the organization for supplying emergency rest and feeding centres for people rendered homeless. The Ministry of Health had removed its previous restrictions upon the extent to which the L.C.C. might provide food or bedding for the homeless. Great help had also been given by voluntary organizations.

The Minister of Health has asked fourteen London boroughs to requisition enough suitable empty houses to accommodate 20,000 inhabitants of London who may have to leave home because of enemy bombs.

The Ministry of Home Security in a long announcement issued on September 23 indicated measures that have been put in hand to give fuller protection against air raids and to make public shelters more habitable under the stress of continuous night bombing. Of special medical interest are the statements that chemical closets and other sanitary appliances are being obtained in large quantities to supplement the present arrangements in public shelters, and that drinking water is being provided, while large shelters will be equipped also with first-aid points. Several million earplugs (of which the manufacture has been going on for some time) will be issued immediately by the Ministry through local authorities for protection of ear drums and as an aid to rest and sleep. Generally, evacuation policy and shelter policy are being co-ordinated so as to alleviate the hardships first in the most vulnerable areas.

The National Commissioner of the Canadian Red Cross announced recently that in response to a message from the British Red Cross the Dominion organization would dispatch immediately 50,000 packages of anti-tetanic serum from the Connaught Laboratories at Ottawa to safeguard against tetanus persons injured in air raids over Britain.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Hypopituitarism and Cardiac Abnormality

Dr. A. GUIRDHAM (Bailbrook House, Batheaston) writes: I should be very grateful if any of your readers could give me their observations on the occurrence of cardiac abnormality in relation to hypopituitarism. The little literature on the relationship between heart and pituitary lesions is concerned mostly with the occurrence of gross cardiac lesions in gross pituitary dyscrasias. The type of case I have in mind is where the milder congenital heart defects are associated with a relatively mild type of Lorraine infantilism. A rather constant finding in these cases is a markedly accentuated pulmonary second sound. I have been struck by the occurrence of epileptoid phenomena in these cases. This may be due to the pituitary dyscrasia *per se*, or is the psychological consequence of a delicate stature in a socially sensitive person, but I consider it possible that the cardiac abnormalities may be associated with a vegetative imbalance responsible for the epileptoid phenomena; that they may, indeed, have some kind of analogy with the vasovagal attacks described by Gower. Your readers' views would be very helpful.

Income Tax

Motor Car: Replacement and Depreciation

"M. S." asks whether a doctor has the option of claiming (*a*) an annual depreciation allowance or (*b*) a lump sum when he buys a new car.

*** Yes. A car is regarded as an implement or an item of plant used professionally, and the net cost of replacement (not the cost of the original car or of any improvement element in the replacement) can be claimed as an expense of carrying on the professional work. If that claim is not made, then the depreciation allowance can be claimed supplemented by the obsolescence allowance when replacement is effected. In the long run the two should yield approximately the same result, but the replacement allowance operates later, and misses the last car, which is not replaced—at any rate for professional use. We advise claiming the depreciation allowance.

LETTERS, NOTES, ETC.

Ear Plugs

Several correspondents have inquired where they can obtain the "rizla" filter tips recommended by Squadron Leader John E. McGibbon in his letter on protection of the auditory apparatus from noise published on September 14 (p. 365). We have referred this query to Squadron Leader McGibbon. Though he does not know the address of the manufacturers of these filter tips, he states that they can be got at any tobacconists in threepenny cartons. As a clue to the manufacturers he adds that they also market a "rizla jiffy" cigarette maker.

Dr. W. M. M. JACKSON (Boscombe) writes: I was much interested in the letter on the protection of the auditory apparatus appearing in the *Journal* (September 14). It seems that the filter tips mentioned are supplied in varying lengths. I think that the *longest* would be the easiest to introduce, and if a small length of silk or cotton is threaded through the tip it is quite easy to withdraw the tip from the meatus.

Dr. J. EWING KENNEDY (Glasgow) writes: I teach the use of "glitter wax" as a suitable plastic for plugging the ears for the following reasons: (1) It "occurs" as a hard substance which is easily softened into a perfectly pliable condition by the heat of the hands. (2) It need not be moulded before insertion into the meatus. (3) It is almost 100% soundproof. (4) It does not break after insertion nor does it leave particles adhering to the walls of the meatus. (5) Its insertion is painless, and it will not disturb sleep. (6) It is clean, and may be cleansed with cold water and soap. (7) After removal it becomes rapidly hard and may be carried about and used repeatedly. (8) It is the most comfortable means of plugging the meatus efficiently, without pulling up the auricle or previous moulding. I have tried all kinds of obturators for persons unable to sleep owing to noise and find this method most acceptable.

Messrs. P. B. COW AND CO., LTD., rubber manufacturers, Streatham Common, S.W.16, write with reference to Squadron Leader J. E. G. McGibbon's letter in the *Journal* of September 14 (p. 365) on the subject of protection of the auditory apparatus from noise: We should like to point out that the "Li-Lo" ear plugs cannot be considered at all expensive, as the retail price is only 3d. per pair. We agree that unless care is taken, being comparatively small, they might easily be lost, but it must be borne in mind that originally these plugs were produced for protecting the ears from sea-water, although many hundreds of thousands of pairs are now being disposed of through various channels as a protection against air-raid noise.

A Useful Emergency Appliance

Dr. F. N. R. PRICE (Stoke-on-Trent) sends the following description of a simple appliance to control bleeding, which elaborates slightly that sent by Dr. Vincent Bates and published in the *Journal* of September 14 (p. 365): In dealing with civilian air-raid casualties one of the most urgent matters for first-aid attention is the control of bleeding. This is not always easily dealt with by manual compression, and tourniquets of approved pattern are not always available in number. To meet the requirements I have found the following appliance simple and inexpensive to make. Obtain an old motor-cycle or car inner tube cut in suitable lengths in the form of a two-inch roller bandage. Tie at one end a tape, leaving the free ends about half a yard long. Turn over the tapes and roll as a bandage; a rubber band can then be put round to keep it rolled. This appliance can be used as a tourniquet or as a bandage over a dressing to control oozing from large lacerated wounds. It may also be found useful to control bleeding while inserting sutures, particularly so by fixing round the forehead in the treatment of scalp wounds. There is the further advantage that it can be easily sterilized by boiling and can be used repeatedly. I send this note for publication because the appliance may be of interest to those in charge of first-aid posts and for distribution to trained personnel as part of their first-aid equipment.

Closure of Public Conveniences

Dr. J. R. WHITWELL writes: The powers that be have now apparently created a new Commandment—"Thou shalt not micturate." The distress caused to many people by the compulsory closing of all public conveniences is extremely great, and I have been asked by several people in the street what they are to do. Perhaps I had better not give my reply, but it gave relief. Can nothing be done to correct this error?